Rhodora

JOURNAL OF THE

NEW ENGLAND BOTANICAL CLUB

Conducted and published for the Club, by

BENJAMIN LINCOLN ROBINSON, Editor-in-Chief.

MERRITT LYNDON FERNALD
HOLLIS WEBSTER
CARROLL WILLIAM DODGE } Associate Editors

WILLIAM PENN RICH
EDWARD LOTHROP RAND } Publication Committee

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Boston, Mass.
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Vol. 25. January, 1923. No. 289.

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THE NEW ENGLAND BOTANICAL CLUB

Vol. 25. January, 1923 No. 289

THE SOUTHERN VARIETY OF THELYPTERIS FRAGRANS

M. L. Fernald.

In studying the plants brought back in 1922 from Baffin Land and Labrador by Mr. Donald B. MacMillan, my interest was especially excited by one fern, because of its unusual aspect. Obviously a member of the genus *Thelypteris*, the plant was characterized by its dense habit and rufescent chaffiness. The stiff and coriaceous fronds about 1 dm. long, with short stipes densely clothed with conspicuous cinnamon-colored or reddish scales, are likewise very chaffy on the back of the rachis, and the reddish scales often extend to the backs of the crowded and more or less inrolled pinnae. Upon comparison in the herbarium MacMillan's material proves to be exactly *Thelypteris fragrans* of the Arctic regions, all material from Greenland and northern Labrador to northern Alaska and Siberia being uniform, except that very large fronds reach a length of 2 dm.

This arctic plant is so strikingly unlike the plant of temperate regions which the writer has repeatedly collected, always at low altitudes, and which has anything but an arctic or arctic-alpine range,—dry slaty, shaly or other basic rocks from east-central Newfoundland to New England, New York and Minnesota and reappearing in temperate eastern Asia (Japan, Amur and Manchuria)—that one wonders that the two have so long passed as identical. The more southern plant is naturally larger, and its fronds are nearly if not decidedly membranaceous, with more scattered and longer pinnae and pinnules, but the most striking difference is in the fewer and

smaller scales on the stipe and especially on the back of the frond from which they are often essentially wanting. Careful examination of these scales indicates no specific difference, nor do characters appear in the indusia and spores. The two plants seem, then, to be an arctic and a temperate eastern American and eastern Asiatic variation of one specific type.

In determining which of the two is the nomenclatorial type of the species we fortunately are aided by good descriptions. Linnaeus founded his *Polypodium fragrans* upon the Siberian *Dryopteris Rubum Idaeum spirans* of Amman. The Linnean account[1] is as follows:

32 POLYPODIUM frondibus sub-bipinnatis lanceolatis: foliolis confertis: lobis obtusis serratis stipite paleaceo. *fragrans.*
Dryopteris Rubum Idaeum [misprinted by Linnaeus rubrum idaeum] spirans. *Amm. ruth.* 251.
Habitat in Siberia.
Habitus P. F. Maris, at longe minor. Foliola *densius congesta, lobis lateralibus obtusis, profundius serratis.*

Amman gave a fuller description[2] though without any additional characters, but his paragraph explaining the name and the type locality is worth quoting:

"Ienisae incolae, vt refert Gmelinus hanc plantam cereuisiae incoquunt, quae gratum inde Rubi Idaei odorem et saporem acquirit. Sicca etiam in conclaui asseruata totum conclaue odore suo implet. In Angarae et Selengae fluuiorum montosis prouenit. Tanquam efficacissimum antiscorbuticum Gmelino commendata fuit."

The Angara rises to the northwest of the Baikal Mountains in Siberia and the Selenga enters Lake Baikal from the south. The type region was, then, the mountains of the Baikal region, and material from that area ("*ad Baikalem*") well matches the more arctic extreme. The description by Amman indicates this plant and the briefer one of Linnaeus with its "foliolis confertis" seems conclusive, that true *Thelpteris fragrans* is the more northern extreme.

The southern extreme was clearly recognized by Hooker in 1862, when he described the typical *Nephrodium fragrans*, of "High arctic or subarctic regions," with fronds "destitute of scales above, while the whole of the rest of the plant is richly palaceous with aureo-nitent scales," and set off as Var. "β, slender submembranaceous very sparsely scaly," the plant of "the Caucasus" and of Wisconsin,

[1] L. Sp. Pl. ii. 1089 (1753).
[2] Amman, Stirp. Rar. Imp. Ruth. 174 (1739).

saying "it is remarkable that the only specimens from those regions are what I here consider the var. β."[1] Whether this southern variety actually occurs in the Caucasus seems very doubtful. At least, Boissier clearly states that the record arose through an erroneous label;[2] but the plant of temperate North America and temperate eastern Asia is clearly Hooker's *Nephrodium fragrans*, var. β, and since it is a well marked geographic variety it may appropriately be called:

THELYPTERIS FRAGRANS (L.) Nieuwl., var. **Hookeriana**, n. var., frondibus submembranaceis vel membranaceis 0.7–3 dm. longis 2–5.5 cm. latis subtus sparse vel sparsissime paleaceis; pinnis pinnulisque nec confertis plerumque subremotis.—NEWFOUNDLAND: dry ledges and talus, north bank of Exploits River below the falls, Grand Falls, July 3, 1911, *Fernald, Wiegand, Bartram & Darlington*, no. 4293; dry mossy trap ledges in woods south of Norris Arm, August 11, 1911, *Fernald & Wiegand*, no. 4294; dry cliffs and talus, Tilt Cove, August 22, 1911, *Fernald, Wiegand & Darlington*, no. 4295. QUEBEC: Seven Islands, August 12, 1907, *C. B. Robinson*, no. 879; in clefts of rocks, on mossy cliffs, and sometimes on stony hillsides, River Saguenay, August 15, 1865, *D. A. Watt*; shaded cliffs of the Saguenay River, August 9–14, 1879, *Pringle*; on a cliff in woods, side of Mt. Albert, Gaspé Co., August 2, 1881, *J. A. Allen*, August 8–15, 1905, *Collins & Fernald*; calcareous cliffs, gorge of River Ste. Anne des Monts, August 15, 1906, *Fernald & Collins*, no. 281 (TYPE in Gray Herbarium); dry calcareous ledges and cliffs, between Baldé and the Baie des Chaleurs, Bonaventure River, August 5, 6 and 8, 1904, *Collins, Fernald & Pease*; dry faces of trap cliffs, Tracadigash Mt., Carleton, July 24, 1904, *Collins, Fernald & Pease*; at various stations on dry limestones and slates, Bic, July, 1904 and 1907, *Fernald & Collins*, nos. 837, 838, etc.; slaty ledges along Metapedia River, Assemetquagan, July 29, 1922, *Fernald & Pease*, no. 24,779; shaded dry cliffs (both calcareous and non-calcareous), Mt. Elephantis, Potton, Broome Co., July 7, 1909, *A. S. Pease*, no. 11,953, August 10, 1903, *J. R. Churchill*. NOVA SCOTIA: cliffs along Barrasois River, Cape Breton Island, July 21, 1915, *G. E. Nichols*, no. 1126. MAINE: cliffs by fall, Cascade Brook, Township XVIII, Range 10, Aroostook Co., July 31, 1893, *Fernald*, no. 204; eastern face of cliff at Mt. Kineo, August, 1867, *C. E. Smith*, August 28, 1871, *T. C. Porter*, September 18, 1887, *G. G. Kennedy*; rock cliffs and slides, 2400–2600 ft., Spencer Mt., East Middlesex, August 27, 1907, *J. A. Cushman*, no. 1777. NEW HAMPSHIRE:

[1] Hook. Sp. Fil. iv. 122, 123 (1862).

[2] "*Aspidium fragrans* Sw. species Sibirica schedula erronea in Caucaso ex herb. Vindob. indicatum videtur."—Boiss. Fl. Orient. v. 737 (1884).

shaded cliff, Gorge of Diamond River, Dartmouth College Grant, August 2, 1914, *A. S. Pease*, no. 16,153; Alpine Cascade, Gorham, 1873, *C. E. Faxon,* September 4, 1903, *Pease,* no. 2530; dryish cliffs, Crystal Cascade, Pinkham Grant, August 7, 1879, *Edwin Faxon*, September 6, 1907, *Pease*, no. 10,715; shaded cliffs, Ice Gulch, Randolph, September 13, 1895, *T. O. Fuller & H. A. Purdie*, August 28, 1901, *Pease*, no. 25; dry ledges, Mine Brook, Shelburne, August 15, 1908, *Pease*, no. 11,664. VERMONT: Mt. Mansfield, August, 1877, *Faxon*, *Pringle*, and many later collections by others; Smuggler's Notch, *Faxon et al.;* dry sheltered cliffs, Underhill (Nebraska) Notch, *Eggleston et al.;* altitude 1500 ft., Mt. Zion, East Hubbardton, July 17, 1898, *Eggleston & Ross*; rocky cliffs, elevation not over 1000 ft., Mt. Zion, September 1911, *Rugg*. ONTARIO: rocky cut on Canadian Pacific Ry., Franz, June 22, 1921, *Pease*, no. 17,960; crevices of rocks, Red Rock, Lake Superior, June 24, 1884, *J. Macoun*; Isle St. Ignace, 1866, *O.B. Wheeler*. MICHIGAN: Isle Royale, August 19, 1873, *H. Gillman*, August 6, 1909, *W. S. Cooper*, no. 27; among rocks, Keweenaw Co., August, 1888, *Farwell*, no. 557; on cliffs of greenstone trap east of the Cliff Mine, 1863, *J. W. Robbins*; Phoenix, August, 1885, *T. E. Boyce*. WISCONSIN: St. Croix Falls, 1861, *T. J. Hale*; Dells of the Wisconsin, *I. A. Lapham*. MINNESOTA: Basswood Lake, *L. H. Bailey*, no. 430; St. Paul, *Ellen Cathcart*. UPPER AMUR: on shady sloping cliffs, August 18, 1891, *Korshinski*. MIDDLE AMUR: on crags in oak copses, June 5, 1891, *Korshinski*. MANDSHURIA: Amur River, 1855, *R. Maack*. JAPAN: Sapporo, October 19, 1903, *Arimoto*.

GRAY HERBARIUM

PLANTS OF THE HAMILTON INLET AND LAKE MELVILLE REGION, LABRADOR.

R. H. WETMORE.

DURING the summer of 1921, the Canadian Government conducted a Survey in the region of Hamilton Inlet and Lake Melville, Labrador. While on that Survey, during the months of July and August, the writer collected the plants listed below. However, this does not represent an exhaustive study of the flora of the area covered, for the Survey itself was preeminently hydrographical and geological in its intent, hence those elements of the work were stressed accordingly; also the mode of travel of our party—by motor-boat and canoe—was conducive only to botanizing those points at which stops were made.

The plants were identified at the Gray Herbarium, Harvard University, before being forwarded to Ottawa, where they are now filed with the Geographical Survey. It is with the permission of the Director of that Survey that this list is being published.

Below is appended a list of the important stops of our trip, the names used being generally those employed by A. P. Low in his maps of that region, which were published by the Canadian Geological Survey in 1896. These places are numbered and the numbers will be used in the list following to stand for the places cited.

Before continuing with the list, the writer takes this opportunity to express his thanks to Prof. M. L. Fernald, with whose help the identification was done, and also to the Librarians of the Gray Herbarium for their assistance in finding literature needed. The names of introduced species are in italics.

List of Stations

1. Indian Harbor and adjacent islands.
2. Black Island, Hamilton Inlet.
3. Double Mer—along the shores only.
4. Barrens north of Rigolet.
5. North side of the Narrows, from the mouth of Double Mer to the east end of Lake Melville.
6. South side of the Narrows, from opposite the mouth of Double Mer to the entrance to the Backway, both on the shores and the adjacent barrens and bogs.
7. The shores and neighboring terraces of Mulliock Cove.
8. Shores and adjacent territory at Carravalla Bay.
9. Along Mulligan's River, including neighboring barrens and mountains.
10. Shores at Northwest River.
11. Grand Lake, shores only.
12. Shores of the Nascaupee River.
13. Hamilton River, near Muskrat Islands.
14. Shores and portage at Muskrat Falls, Hamilton River.
15. Shores of the Kenemich River.
16. South side of Lake Melville, from Carter Basin to English River.
17. Barrens and mountains at English River.
18. Shores and barrens on the Backway.
19. Grass field at Mud Lake (Gillesport).
20. Shores at Sabascachew Bay.

List of Plants

Polypodiaceae

Thelypteris Phegopteris (L.) Slosson ... 1, 14, 17
T. Dryopteris (L.) Slosson ... 4, 6
T. spinulosa (O. F. Muell.) Nieuwl ... 6, 17
Athyrium angustum (Willd.) Presl ... 17

Osmundaceae

Osmunda Claytoniana L. ... 17

Equisetaceae

Equisetum sylvaticum L., var. pauciramosum Milde ... 4
E. palustre L. ... 12

Lycopodiaceae

Lycopodium annotinum L. ... 12, 14
L. annotinum L., var. acrifolium Fernald ... 4, 9
L. annotinum L., var. pungens (La Pylaie) Desv ... 4, 6
L. alpinum L. ... 7
L. obscurum L. ... 9
L. complanatum L. ... 12

Pinaceae

Abies balsamea (L.) Mill. ... 3–20
Juniperus communis L., var. montana Ait ... 18

Sparganiaceae

Sparganium angustifolium Michx ... 9

Najadaceae

Potamogeton heterophyllus Schreb., var graminifolius (Fries) Morong ... 12

Juncaginaceae

Triglochin maritima L. ...

Gramineae

Hierochloë alpina (Sw.) R. & S. ... 1
Phleum *pratense* L. ... 14, 19
P. alpinum L. ... 1
Agrostis hyemalis (Walt.) BSP ... 12, 14
Agrostis *alba* L., var. *vulgaris* (With.) Thurb ... 19
Calamagrostis canadensis (Michx.) Beauv., var. Langsdorfi (Link) Inman ... 1, 5, 6, 8, 11
Calamagrostis neglecta (Ehrh.) Gaertner, Meyer, & Scherbius 4, 5, 10, 12
Cinna latifolia (Trev.) Griseb ... 10, 14
Deschampsia flexuosa (L.) Trin., var. montana (L.) Parl ... 3, 6
Poa eminens J. S. Presl ... 5, 6, 9
P. pratensis L. ... 5, 6, 14, 19
Glyceria nervata (Willd.) Trin., var. stricta Scribn ... 12
G. borealis (Nash) Batchelder ... 11
Festuca rubra L. ... 5, 6
Hordeum jubatum L. ... 12

Elymus arenarius L., var. villosus E. Meyer...1–3, 5–8, 10, 16–18

CYPERACEAE

Eleocharis palustris (L.) R. & S..........................9
E. acicularis (L.) R. & S...............................12
Scirpus cespitosus L., var. callosus Bigel.................1
S. rubrotinctus Fernald.................................11
S. atrocinctus Fernald, var. brachypodus Fernald..........12
Eriophorum Chamissonis C. A. Meyer.......................6
E. callitrix Cham. 4
E. gracile Roth..10
E. angustifolium Roth..............................1, 17
E. Scheuchzeri Hoppe......................................1
Carex projecta Mackenzie (*C. tribuloides* Wahlenb., var. *reducta* Bailey)..12
C. echinata Murr., var. angustata (Carey) Bailey...........14
C. canescens L. 10
C. brunnescens Poir...........................5, 6, 14
C. Macloviana D'Urv.......................................1
C. glareosa Wahlenb., var. amphigena Fernald...........5, 6
C. stipata Muhl. 12
C. maritima O. F. Mueller.......................5, 6, 12
C. salina Wahlenb., var. kattegatensis (Fries) Almq.....10, 12
C. rigida Good. 11
C. lenticularis Michx. 10
C. rariflora Smith......................................5, 6
C. miliaris Michx................................11, 14
C. vesicaria L. 10, 20
C. rostrata Stokes 12

JUNCACEAE

Juncus trifidus L..1
J. balticus Willd., var. littoralis Engelm...........14, 20
J. filiformis L. 10, 12
J. alpinus Vill., var. insignis Fries.................11, 12
Luzula spicata (L.) DC.....................................1

LILIACEAE

Clintonia borealis (Ait.) Raf.........................14, 17
Smilacina trifolia (L.) Desf.................Common in all bogs
Maianthemum canadense Desf.......................11-15, 17
Streptopus amplexifolius (L.) DC.....................16, 17

IRIDACEAE

Iris setosa Pall., var. canadensis Foster....1–3, 5–8, 16–18, 20
Sisyrinchium angustifolium Mill...........................19

ORCHIDACEAE

Habenaria hyperborea (L.) R. Br...........................15
H. dilatata (Pursh) Gray...................................1

Spiranthes Romanzoffiana Cham. . . . 19
Goodyera repens (L.) R. Br., var. ophioides Fernald . . . 17
Listera cordata (L.) R. Br. . . . 17

Salicaceae
Salix lucida Muhl. . . . 11
S. lucida Muhl., var. intonsa Fernald . . . 11
S. planifolia Pursh . . . 18
S. anglorum Cham. . . . 1
Populus tremuloides Michx. . . . 9, 12

Myricaceae
Myrica Gale L. . . . 18

Betulaceae
Betula glandulosa Michx. . . . 1, 18
B. microphylla Bunge . . . 7, 17, 18
Alnus crispa (Ait.) Pursh . . . 9, 15

Santalaceae
Comandra livida Richards. . . . 6, 9

Polygonaceae
Rumex occidentalis Wats. . . . 8, 12
R. *acetosella* L. . . . 10
Polygonum aviculare L. . . . 10
P. viviparum L. . . . 5–8, 20

Chenopodiaceae
Chenopodium *album* L. . . . 9

Caryophyllaceae
Arenaria lateriflora L. . . . 9
A. peploides L. . . . 5, 6, 7
A. groenlandica (Retz.) Spreng. . . . 17
Stellaria borealis Bigel. . . . 9
S. crassifolia Ehrh. . . . 8
S. humifusa Rottb. . . . 8
S. longipes Goldie, var. laeta (Richards.) Wats. . . . 1, 5, 6
S. *media* (L.) Cyrill . . . 8
Cerastium arvense L. . . . 1
C. alpinum L., var. lanatum Hegetschw. . . . 1
Silene acaulis L., var. exscapa (All.) DC. . . . 1

Ranunculaceae
Ranunculus reptans L. . . . 11
R. pennsylvanicus L. f. . . . 12
R. *acris* L. . . . 19
R. hyperboreus Rottb. . . . 1
R. lapponicus L. . . . 5
Thalictrum polygamum Muhl. . . . 19
Coptis trifolia (L.) Salisb. . . . 4, 9
Actaea rubra (Ait.) Willd. . . . 12

CRUCIFERAE
- Draba incana L. 5, 6
- Thlaspi *arvense* L. 19
- Capsella *Bursa-pastoris* (L.) Moench. 5
- Cochlearia sp. (undetermined) 1
- C. sp. (undetermined) 1
- C. sp. (undetermined) 1

SARRACENIACEAE
- Sarracenia purpurea L. 16

CRASSULACEAE
- Sedum roseum (L.) Scop. 1

SAXIFRAGACEAE
- Parnassia palustris L. 1, 16
- Ribes prostratum L'Hér. . . . . common everywhere

ROSACEAE
- Pyrus dumosa (Greene) Fernald. 17, 18
- Amelanchier Bartramiana (Tausch.) Roem. 6
- Potentilla monspeliensis L. 5–10, 16, 19, 20
- P. palustris (L.) Scop. 5, 6, 8
- P. tridentata Ait. 6
- P. pacifica Howell. 1–9, 16–18, 20
- Geum macrophyllum Willd. 15
- Rubus idaeus L. 18
- R. Chamaemorus L. 1–9, 15–18, 20
- R. triflorus Richards 9
- Sanguisorba canadensis L. 10–12
- Prunus pennsylvanica L. f. 9
- Dryas integrifolia Vahl. 1

LEGUMINOSAE
- Trifolium *pratense* L. 19
- T. *repens* L. 19
- T. *agrarium* L. 19
- Astragalus alpinus L. 1
- Oxytropis campestris DC., var. caerulea Koch. 1
- Vicia *Cracca* L. 19
- Lathyrus maritimus (L.) Bigel. . common on all salt and brackish shores, and on Grand Lake.

GERANIACEAE
- Geranium *pratense* L. 10

CALLITRICHACEAE
- Callitriche palustris L. 12

EMPETRACEAE
- Empetrum nigrum L. . . . . common on all barrens and rocky headlands.

VIOLACEAE
- Viola labradorica Schrank. 1, 3

Onagraceae

Epilobium angustifolium L. . . common everywhere west of Rigolet
E. latifolium L. 3, 9
E. palustre L. 8
E. palustre L., var. longirameum Fernald & Wiegand 8
E. glandulosum Lehm., var. adenocaulon (Haussk.) Fernald 8, 12

Haloragidaceae

Hippuris vulgaris L., var. maritima (Hellen.) Wahlenb. 8

Umbelliferae

Coelopleurum lucidum (L.) Fernald 5, 6
Angelica atropurpurea L. 1, 5, 6, 15

Cornaceae

Cornus canadensis L. 4, 6, 9, 13
C. suecica L. 1, 5, 6
C. stolonifera Michx. 14, 17

Ericaceae

Moneses uniflora (L.) Gray 4, 16
Pyrola minor L. 15
P. secunda L., var. obtusata Turcz. 14
P. chlorantha Sw. 14
Ledum groenlandicum Oeder . . . . . . common on all barrens
L. palustre L. 1
Kalmia angustifolia L. 9–15, 20
K. polifolia Wang. 1, 3, 4, 6
Phyllodoce caerulea (L.) Bab. 4
Chamaedaphne calyculata (L.) Moench. 4, 6
Arctostaphylos alpina (L.) Spreng. 4, 7, 17, 20
Chiogenes hispidula (L.) T. & G. 4
Vaccinium pennsylvanicum Lam., var myrtilloides (Michx.) Fernald . . . . common on all barrens
V. pennsylvanicum Lam., var. angustifolium (Ait.) Gray 4
V. uliginosum L. . . . . common on all barrens.
V. Vitis-Idaea L., var. minus Lodd. . . common on all barrens and mountains.
V. Oxycoccus L. 4

Diapensiaceae

Diapensia lapponica L. 17

Plumbaginaceae

Statice labradorica Hubbard & Blake 1

Primulaceae

Primula farinosa L. 1
P. farinosa L., var. macropoda Fernald 11
Trientalis borealis Raf. . . . . . common in woods everywhere.

Gentianaceae

Gentiana Amarella L. 3

Boraginaceae
Mertensia maritima (L.) S. F. Gray 1, 3

Labiatae
Galeopsis *Tetrahit* L. 18, 19
Mentha arvensis L., var. glabrata Fernald 12

Scrophulariaceae
Veronica scutellata L. . . . . ?
Castilleja pallida (L.) Spreng., var. septentrionalis (Lindl.) Gray 11
Euphrasia arctica Lange 1, 2
Pedicularis flammea L. 1
P. groenlandica Retz. 11
P. euphrasioides Stephen 1, 6
Rhinanthus Crista-galli L. 1

Lentibulariaceae
Pinguicula vulgaris L. 1
P. villosa L. 1

Plantaginaceae
Plantago decipiens Barneoud 20

Rubiaceae
Galium trifidum L. 10
G. labradoricum Wiegand 10
G. triflorum Michx 15
Linnaea borealis L., var. americana (Forbes) Rehder . . common in all woods

Carifoliaceae
Viburnum pauciflorum Raf. 9

Compositae
Solidago macrophylla Pursh 3, 17
S. macrophylla Pursh, var. thyrsoidea (E. Meyer) Fernald 9
S. lepida DC. 15
Aster foliaceus Lindl. 11
Erigeron acris L., var. asteroides DC. 19
Anaphalis margaritacea (L.) B. & H., var. occidentalis Greene. 14
Achillea Millefolium L., var. nigrescens E. Meyer . . common on all shores
Chrysanthemum *Leucanthemum* L., var. *pinnatifidum* Lecoq. & Lamotte 19
Artemisia canadensis Michx 13
Petasites palmatus (Ait.) Gray 12
Senecio palustris (L.) Hook 1
S. Pseudo-Arnica Less. 5, 6, 20
Cirsium muticum Michx 15
Leontodon *autumnalis* L. 19
Taraxacum ceratophorum DC 1

T. *officinale* Weber 10
Lactuca spicata (Lam.) Hitchc. 15

Harvard University.

FALCARIA RIVINI, A PLANT NEW TO THE UNITED STATES

E. M. Gress.

A colony of *Falcaria rivini* Host.[1] has been discovered on the farm of S. G. Myers about 4 miles south of Mercersburg, Franklin County, Pa. The colony covers an area about 10 ft. in diameter in the middle of a field of limestone soil.

Mr. Myers first noticed the plant about five years ago growing in the clover and timothy, but gave little attention to it until he noticed that the plant was not eradicated by the ordinary method off crop rotation which consisted of clover and timothy, followed by corn, this being followed by wheat.

A specimen of the plant was shown to Dr. John L. Bradley, a Veterinarian of Mercersburg, Pa., who noticed at once that the plant was not one of our common weeds. Dr. Bradley sent some specimens to the Bureau of Plant Industry at Harrisburg, for identification.

The writer accompanied by Dr. Bradley visited the colony on September 9th and found that the plants had been cut off about 8 inches above the ground by the binder when the wheat had been harvested, but that they had sprouted out from the cut stem. Some of the young branches were in bloom while others had passed the blooming period and contained immature fruits. We started to dig up the roots of one of the plants by using a large pen knife. We soon found that it could not be done with this instrument and Mr. Myers secured a mattock for the purpose. We dug as deep as we could with the mattock and then secured a post digger to finish the job. Everything went well until a large limestone rock was encountered through which we could not dig but through which the root seemed to find its way, probably through a crevice. We then cut the root off and measuring it, found it to be 35 inches long. The root was about

[1] *Falcaria vulgaris* Brnh., *Critamus agrestis* Bess., *Drepanophyllum sioides* Web *Sium falcaria* L., *Bunium falcaria* Bieb., *Drepanophyllum agreste* Hoffm. & Koch. *Seseli falcaria* Crantz, *Crithmum umbelliferum* Bauh.

¼ inch in diameter throughout the entire length and had penetrated the soil in a vertical direction.

We did not find any seedlings and the plant seems not to be spreading by seeds but the colony is increasing in diameter by the underground roots. Many rosettes of young plants were found over the area and particularly around the outer edge.

Observations of the colony leads us to believe that the plant will become a very noxious weed if allowed to spread. Failure to spread by seeds may be due to the fact that the plant has been cut before the seeds were mature enough to grow or it may be that viable seeds do not form in its new habitat. These facts have not as yet been determined. There is no doubt, however, that it is able to spread and persist by its deep perennial roots.

The plant is a native of southern and middle Europe and parts of Asia and has been found in Argentina and Costa Rica but so far as we can find out it has never before been found growing in the United States.

Casually the plant would probably be mistaken for wild carrot. The leaves, however, are so different from the lace-like leaf of wild carrot that there is no difficulty in distinguishing it from that plant.

The leaves are ternately pinnate, glaucescent, the leaflets are linear-lanceolate, decurrent, finely and irregularly serrate, the teeth terminated by a sharp cartilaginous point, the middle leaflet is generally divided into three equal decurrent parts or leaflets, the lateral leaflets are irregularly divided into one to three parts or leaflets. The root leaves are long-petioled, while those on the stem have short inflated petioles. The umbels are many-rayed with both involucres and involucels of small, narrow bracts. The flowers are small with a five-toothed calyx and white incurved petals. The fruit (not mature) is oblong with widely diverging styles and filiform ribs and one oil-tube in each furrow between the ribs.

Office of State Botanist, Harrisburg, Pa.

THE NATIVE TANSY OF NEWFOUNDLAND.

M. L. Fernald.

In a recent valuable little collection brought back from Flower's Cove on the Newfoundland side of the Straits of Belle Isle by Miss

Mary E. Priest, and containing several plants heretofore unknown from Newfoundland, is a dwarf and lanate large-headed tansy with almost scapose stems less than 1 dm. in height. Miss Priest's plant is identical with specimens collected by Fernald, Wiegand & Kittredge in 1910 on dry limestone barrens fifty miles to the south, on the shores of Ingornachoix Bay. The Newfoundland plant seems to be an extreme variation of *Tanacetum huronense* Nutt., which in its typical form occurs from the St. John Valley in New Brunswick to Hudson Bay and Lake Superior and it is here proposed as:

TANACETUM HURONENSE Nutt., var. **terrae-novae,** n. var., a forma typica recedit habitu subscaposo, caule 0.7–1.3 dm. alto lanato; foliis confertis 3.5–9 cm. longis subtus albido-tomentosis vel -lanatis, segmentis confertis; capitulis 1–3; involucro lanato.

Differing from the typical form of the species in its subscapose habit; the stem 0.7–1.3 dm. high, lanate, 1–3-headed; leaves crowded at the base of the stem, 3.5–9 cm. long, white-tomentose or -lanate beneath, their segments crowded: involucre lanate.—NEWFOUNDLAND: dry rocky limestone barren, near sea-level, Ingornachoix Bay, August 2, 1910, *Fernald, Wiegand & Kittredge*, no. 4162 (TYPE in Gray Herb.); coast, Flower's Cove, July 26, 1921, *Mary E. Priest*, no. T, 4.

The typical continental form of the species has stems 2.5–8 dm. high, with remote leaves mostly 1–3 dm. long. It is much greener and less pubescent throughout and the stems bear 1–8 heads.

It is not impossible that *Tanacetum huronense* should be treated as a variety of *T. bipinnatum* (L.) Schz.-Bip., which extends from Russian Lapland across northern Asia to Alaska and the Mackenzie. The characters relied upon by Rydberg in the *North American Flora* to separate the two seem sufficiently clear:

"Ligules erect or ascending, decidedly concave;
heads several........:..................2. *T. huronense*"
"Ligules spreading, flat; heads 1-4...............4. *T. bipinnatum*"[1]

but unfortunately the description of the ligules as "decidedly concave" must have arisen through study of poorly dried material. The writer has intimately known *T. huronense* for thirty years, making his first collections of it in 1893, his latest in 1922, with six other collections in the interval, and he has not noticed any conspicuously "concave" character. The ligules are often inconspicuous but in the same areas they may become quite obvious; for instance, Fernald & Long's no.

[1] Rydb. N. A. Fl. xxxiv. 238 (1916).

14,860 from Woodstock, New Brunswick, admirably shows flat ligules 4 mm. long. These are, however, as described by Rydberg, more ascending than in *T. bipinnatum*, and in this character the two are perhaps separable. The apiculate tips to the leaf-segments are identical, as are the achenes and pappus and, although the key-character above quoted gives *T. huronense* "heads several" and *T. bipinnatum* "heads 1–4," the 55 flowering stems of the former now before the writer show 9 specimens with 1 head, 11 with 2, 20 with 3 and 9 with 4 (total, 49 out of 55), while only 1 has 5 heads, 2 have 6, 2 have 7 and 1 has 8. Upon its more elevated disk and less spreading, usually more deeply lobed, ligules *T. huronense* is distinct from the scanty material at hand of *T. bipinnatum*, but the differences are so slight that, when the intermediate country between Lake Superior and the Yukon is better known, it is highly probable that exactly transitional plants will be found.

The genus *Tanacetum* is tentatively retained in its traditional sense, although Hoffmann[1] and his followers in Germany, Austria and Switzerland merge it with *Chrysanthemum*. The group is so largely Eurasian that in America we are scarcely in position properly to weigh generic values within it. Prior to Hoffmann's treatment the traditional practice in continental Europe was to consider as true *Chrysanthemum* the species such as *C. segetum* L. and *C. coronarium* L., in which the pappus is obsolete and the achenes dimorphic, at least the outer ones with 2 or 3 wing-angles. This was the treatment of Schultz Bipontinus[2] when he maintained *Chrysanthemum* in its most restricted sense and treated as *Tanacetum* the plants with uniform 5–10-costate achenes and coroniform pappus. The *Tanacetum* of Schultz contained very diverse elements, all of which are included by Hoffmann in *Chrysanthemum*—such plants as *T. Balsamita* L., the Costmary of old gardens, which Rydberg in the *North American Flora* maintains as a monotypic genus, *Balsamita Balsamita* (L.) Rydb. separated from *Tanacetum* because it has "Heads discoid, homogamous, *i. e.*, ray-flowers wholly wanting," thus quite ignoring the fact that typical *T. Balsamita* is a plant correctly described by Boissier "ligulis albis disco aequilongis" (*Fl. Orient.* iii. 345). Schultz also included *T. Parthenium* (*Chrysanthemum Parthenium* (L.)

[1] O. Hoffm. in Engler & Prantl, Pflanzenf. iv. Ab. 5: 277, 278 (1892).

[2] Schz.-Bip. Ueber die Tanaceteen (1844).

Bernh.), the old fashioned Feverfew; *T. atratum* (*C. atratum* L.), an alpine Marguerite closely related to our introduced Daisy or White Weed, *C. Leucanthemum* L. or *Leucanthemum vulgare* Lam.; and *T. indicum* (*C. indicum* L.), one of the progenitors of the garden Chrysanthemum. Somewhat similarly, Boissier,[1] in 1875, maintained *Chrysanthemum* in its restricted sense and threw the others, including *Tanacetum*, into *Pyrethrum*. The problem, as already said, is essentially one for the European student to settle, since the great bulk of species is Eurasian, but until there is fuller agreement among the more thorough students of Eurasian *Compositae* it seems better for us to maintain, for the present, *Tanacetum* as generically distinct from *Chrysanthemum* in the restricted sense. If *Tanacetum*, *Pyrethrum*, *Leucanthemum*, etc., constitute a single genus distinct from *Chrysanthemum*, an interpretation which has much authoritative support, the earliest generic name is, of course, *Tanacetum* L. Sp. (1753) which antedates *Leucanthemum* Mill. (1754) and *Pyrethrum* Scop. (1772).

Gray Herbarium.

Isle au Haut Plants.—During the summer of 1921, I found growing amongst various grasses on what is known as Birch Point, though there seem to be no birches there, *Luzula campestris* (L.) DC., var. *acadiensis* Fernald. This will be found described by Prof. Fernald in Rhodora, Vol. 19, p. 38, from eastern Canada. His comment on my plant is "first in Maine."

About the same time I found on York Island, which lies close to the eastern shore of Isle au Haut, a golden-rod, *Solidago lepida* DC., var. *molina* Fernald, which is also "new to New England." This was described by Prof. Fernald in Rhodora, Vol. 17, p. 9. It is mentioned in Gray's Manual (7th edition) under *S. canadensis* L., var. *gilvocanescens* Rydb., but with no footing in New England.

I wish to acknowledge Prof. Fernald's kindness in identifying both of these plants for me.—Nathaniel T. Kidder, Milton, Massachusetts.

[1] Boissier, Fl. Orient. iii. 335 *et seq.* (1875).

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THE NEW ENGLAND BOTANICAL CLUB

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SOME CRITICAL PLANTS OF ATLANTIC NORTH AMERICA.

C. A. Weatherby.

The following notes are the result of an attempt to name accurately certain critical plants contained in the collections of the late Professor E. J. Grimes from southeastern Virginia. In so far as they have merit, it is hoped that they may serve, in some sort, as a memorial of the thorough and keenly discriminating work which, during two seasons, he had done as collector and student of the too little known flora of the southern coastal plain, as represented in his region. All botanists interested in the taxonomy, distribution, and ecology of the plants of eastern North America may well regret his untimely death.

Though the bulk of the finished notes is not great, some of them have called for a considerable correspondence. I am indebted for the loan of specimens, for needed information, or for other aid in the preparation of this paper, to Prof. J. F. Collins, Dr. A. B. Stout, Mr. K. K. Mackenzie, Mr. Bayard Long and, like all students of our eastern flora, to Prof. M. L. Fernald. To all, my thanks are extended.

Carex Mitchelliana M. A. Curtis, Am. Journ. Sci. xliv. 84 (1843); Dewey, op. cit. xlviii. 140 (1845) in part, but not as to illustration; Boott, Ill. i. 18, t. 50 (1858), at least as to perigynium figured.—Similar to *C. crinita*, var. *gynandra*, but the spikes usually more slender; lowest sheaths slightly hispidulous or rarely smooth; perigynia ovate, 2.5–3.5 mm. long, 1.4–2 mm. wide, lenticular, scarcely inflated, strongly granular-roughened with minute papillae,

distinctly 2–4-nerved on both sides; achenes ovate or suborbicular, 1.5–2 mm. long, 1.1–1.5 mm. wide, substipitate, not at all bent or contorted.—Massachusetts: swale by Swan Pond, Dennis, July 23, 1918, *Fernald*, no. 16,473; Harwich, June 10, 1916, *Winslow & Sanford*; swale, West Yarmouth, July 22, 1907, *E. W. Sinnott*; Hyannis, July 4, 1874, *Wm. Boott*. New Jersey: Pemberton, July, 1873, *Canby* (sheaths smooth); New Egypt, June 10, 1905, *J. H. Grove*, no. 48; Forked River, June 1, 1896, hb. *Joseph Crawford*; Albion, June 26, 1907, *Van Pelt*, no. 2; rich swampy woods, Cape May Court House June 1, 1912, *Bayard Long*, no. 7245. Delaware: swamp, Millsboro, June 18, 1875, *Commons*. Virginia: open swamp, 3 miles west of Williamsburg, June 16, 1921, *Grimes*, no. 3781. South Carolina: Santee Canal, May, *Ravenel*. Georgia: bank of woodland stream near Atlanta, May 29, 1901, *Curtiss*, no. 6802. Florida: without date or definite locality, *Croom*. Alabama: without definite locality, 1867, *Peteers*. The New Jersey and Delaware specimens cited are in the herbarium of the Philadelphia Academy of Sciences.

C. Mitchelliana is a rather striking plant of the Coastal Plain and the Piedmont, in its strongly granular perigynia suggesting *C. maritima*, but in all other respects clearly a member of the group of *C. crinita*. From all variants of that species, *C. Mitchelliana* is ordinarily well distinguished by the characters given. *C. crinita*, var. *gynandra*, however, to which *C. Mitchelliana* is nearest and to which it has usually been referred, sometimes has plane achenes; and a single immature specimen from the District of Columbia (Takoma Park, May 17, 1903, *J. H. Painter*, no. 166) suggests an intermediate condition in other characters, in that the young perigynia are granular, but not nerved, and are somewhat inflated. Two sheets, one from western Louisiana, *Hale*, and one from Texas, *Wright*, have uncontorted achenes and the perigynia somewhat granular. But the latter are nerveless, more or less inflated, and, in the Wright specimen, obovate; the spikes are densely flowered and the lower sheaths entirely smooth. These plants seem best regarded as an extreme phase of *C. crinita*.

The redescription and citation of specimens above are rendered desirable by the vagueness of Curtis's original diagnosis. Indeed, the evidence as to the application of the name *C. Mitchelliana* is not altogether satisfactory. Curtis places emphasis chiefly on the shortness of the spikes in his plant and mentions none of the perigynial characters which set the species, as here interpreted, apart. Prof. W. C. Coker, who has kindly interested himself in the matter, informs

me that Curtis's phaenogamic herbarium was broken up after his death and distributed among a number of small institutions: under these circumstances I have been unable to locate the type of *C. Mitchelliana.* In the herbarium of Brown University is a sheet on which Olney has noted that the plant represented thereon was submitted to Curtis and that he said it looked "mighty like *C. Mitchelliana.*" This plant is the short-spiked form of *C. crinita,* var. *gynandra* distributed by Olney as *C. gynandra,* var. *caroliniana.* In the Dewey herbarium is a specimen labelled, in Dewey's handwriting, "C. Mitchelliana. S. Carolina . . . Sent from Rev. J. [sic] Ashley Curtis." This is a stunted individual of the plant here treated as *C. Mitchelliana.* In the cover with it is a specimen, from Olney, of a form of *C. crinita,* var. *gynandra* with unusually short and thick spikes. This corresponds closely with Dewey's figure of *C. Mitchelliana* (Am. Journ. Sci. xlviii, pl. Dd, f. 98) and is probably the specimen there illustrated. It seems likely, therefore, that Dewey, perhaps misled by Curtis's emphasis on the shortness of the spikes, confused the coastal plain plant with reduced forms of *C. crinita,* var. *gynandra.* The nerved and strongly granular perigynium figured by Boott certainly belongs to the coastal plain plant; but the contorted achene and the strongly hispidulous sheaths illustrated suggest that he also had mixed material.

It is possible that Curtis likewise included two things under *C. Mitchelliana.* But, in the absence of the real type, the specimen sent by him[1] to Dewey is apparently the only authentic material available: I am accordingly taking it as typical of the species and as determining the application of the name.

The following key may serve to place *C. Mitchelliana* in relation to the main variants of *C. crinita*:

a. Perigynia smooth or nearly so, the sides nerveless or sometimes with a single median nerve which reaches the apex; achenes oblong to obovate, variously bent or contorted, often with a deep wrinkle on one or both edges near the middle. *b*

b. Sheaths smooth and glabrous. *c*

c. Spikes densely flowered, the somewhat spreading and crowded perigynia inflated, broad-ovoid to obovoid, loosely investing the achene and longer than it . . . . *C. crinita.*

c. Spikes less densely flowered, the ascending perigynia not inflated, closely investing the achene and only slightly longer than it, ellipsoid or ovoid . . . . var. *Porteri.*

[1] The use of the initial "J" instead of "M" in Curtis's name on the label appears to be a slip of the pen on Dewey's part. Curtis's letters to Dr. Gray testify that he sent Carices to Dewey on various occasions.

b. Lower sheaths rough-hispidulous with short stiff ascending setae; perigynia ascending, moderately inflated, loosely investing the achene, chiefly ovoid . . . . var. *gynandra.*

a. Perigynia manifestly granular with numerous minute papillae, distinctly 2–4-nerved on both faces, the nerves reaching the apex or near it, lenticular, scarcely inflated, distinctly longer than the achene; achene broadly ovate to suborbicular, not at all bent or contorted; lowest sheaths slightly hispidulous . . . . *C. Mitchelliana*

Polygonum densiflorum Meisn. Fl. Bras. v. pt. 1. 14 (1855). *P. portoricense* Bert. ex Small, Monog. Polyg. 46, t. 10 (1895). *P. eciliatum* Stone, Pl. Southern N. J. 423 (1910), as to plant, but not as to name-bringing synonym. *Persicaria portoricensis* Small, Fl. Southeastern U. S. 377 (1903).

There appears to be no nomenclatorial bar, under any code, to the use of the name *Polygonum densiflorum* Meisn. *P. densiflorum* Bl. of the Index Kewensis is an error. What Blume published in the passage cited, Bijdr. 533 (1825), is *P. corymbosum* ε *densiflorum*, a varietal, not a specific name. Blume's variety is generally referred to *P. chinense* L. as a synonym: I do not find that anyone had raised it to specific rank until this was done through inadvertence by the editors of the Index, long after Meisner had applied the same combination to a wholly different plant.

Meisner's name seems also correctly applied to the plant of the southeastern United States and the West Indies. In his original treatment in the Flora Brasiliensis, Meisner included in *P. densiflorum* a Brazilian plant with somewhat ciliate sheaths and eciliate specimens from Louisiana, the West Indies, Peru and Chile. He specified no type. Later, in the Prodromus xiv. 121 (1864), he divided the species, as thus constituted, into two varieties, α *imberbe*, including the plants of the United States, the West Indies and western South America, and β *ciliatum*, based on the Brazilian plant, of which he seems to have had only one collection. Since Meisner placed our plant in var. α and since in his time a variety so designated was held to be typical of its species when any such distinction was made, it may reasonably be considered that Meisner himself indicated the plant of the United States and the West Indies as typical of *P. densiflorum*. The Chilean and Peruvian plants, of which I have seen no specimens, might not now be regarded as conspecific with ours; in view, however, of the wide ranges of other hydrophilous species of the section *Persicaria*, such as *P. acre*, it is by no means a necessary assumption that they are not.

Urban, Symb. Antill. iv. 211 (1905), reduces *P. densiflorum* to *P. glabrum* Willd. Typical *P. glabrum* of India, however, differs in its smaller perianth, which is nearly or quite destitute of glandular punctation: it seems best considered a distinct species.

The Grimes collection contains excellent material of *P. densiflorum*, already known, in the North, from southern New Jersey and Delaware.

CHELONE **Grimesii**, n. sp., radice ignota; caule simplice, circa 14 dm. alto, minute granulato-puberulo; foliis omnino sessilibus apice acutis vel acuminatis basi rotundatis argute serratis supra viridibus subtus glaucescentibus, medianis ovatis 8–8.5 cm. longis 3–4 cm. latis, inferioribus lanceolatis valde reductis, superioribus ovatis superne gradatim decrescentibus, supremis utrinque minute puberulis; costis foliorum subtus puberulis; bracteis superficie puberulis, margine minute ciliolatis; corollis 2.5–2.8 cm. longis, "purpureis."

Root not seen; stem simple, apparently about 14 dm. high; leaves all completely sessile, acute or acuminate, rounded at base, sharply serrate, green above, more or less glaucous beneath, the median ovate, 8–8.5 cm. long, 3–4 cm. wide, the lower lanceolate, much reduced in size, the upper ovate, gradually decreasing upward; stem, midribs of the leaves beneath, both surfaces of the uppermost leaves, and bracts minutely granular-puberulent; bracts minutely ciliolate; corolla 2.5–2.8 cm. long, purple, according to the collector's notes.—Wooded swamp near Elko, Henrico Co., Virginia, Aug. 8, 1921, *Grimes* no. 4189.

Since there appear to be no floral characters, except color, by which the species of Chelone can be separated, I have confined the description of *C. Grimesii* to those vegetative characters which are most distinctive. It is apparently the plant figured by Miller, Ic. Pl. 17 (1760), though that is represented as having very large upper leaves. But all the leaves shown are ovate and are not only pictured, but described, as sessile. Miller states that his plant was sent from Virginia by Clayton and that it is the latter's "Chelone floribus speciosis pulcherrimis colore rosae damascenae." This last appears to have been a temporary opinion; in both the 1759 and 1768 editions of his Dictionary, Miller assigns the Clayton phrase-name to a plant with petiolate leaves (*C. purpurea* Mill.), which is generally referred to *C. obliqua*. Whatever the correct disposition of Clayton's name, it is, in view of the small amount of collecting which has been done in southeastern Virginia, not impossible that he did find the presumably local *C. Grimesii*, and send it to Europe where it was cultivated and figured by Miller; that it died out of English gardens and was lost sight of until found again now in Clayton's region.

The following synopsis will serve to indicate the relation of *C. Grimesii* to other groups in the genus.

a. Corolla normally white, rarely and exceptionally pink; bracts usually not evidently ciliolate; leaves short-petioled or sessile; pubescence, if present, of short, comparatively stiff, mostly unicellular hairs .... { *C. glabra.* *C. Cuthbertii.* }

a. Corolla pink or purple; bracts usually evidently ciliolate. *b.*

b. Leaves long-petioled; plant (except the bracts) glabrous or sparsely pilose with weak, pluricellular hairs .... { *C. obliqua.* *C. Lyoni.* }

b. Leaves closely sessile; stem and midribs of the leaves beneath minutely granular-puberulent ....*C. Grimesii.*

Gnaphalium obtusifolium L., var. **micradenium**, n. var., plerumque gracile, caule breviter glanduloso-puberulo non tomentoso; foliis linearibus acutis vel obtusiusculis, 1.8–5.3 cm. longis, 1.5–7 mm. latis, rarius majoribus et tum oblanceolatis, subtus tomentosis supra glandulosis; involucri squamis plerumque acutis.

Usually slender; stem glandular-puberulent, not tomentose; leaves linear, acute or obtusish, 1.8–5.3 cm. long, 1.5–7 mm. wide, rarely exceeding these dimensions and then oblanceolate, the lower surface tomentose, the upper glandular; scales of the involucre mostly acute. —Maine: Dry, sandy thicket by Sand Pond, Limington, Oxford Co., Aug. 20, 1916, *Fernald, Long & Norton*, no. 14809. Massachusetts: dry sandy openings among scrub oaks, Barnstable, Oct. 7, 1917, *Fernald*, no. 15870, type in hb. Gray; sandy wood-road through oak and pine barrens, Dennis, Aug. 22, 1918, *Fernald & Long*, nos. 17568, 17667; dry soil, Sandwich, Sept. 16, 1916, *Harger & Woodward*; sandy wood-road, Barnstable, Sept. 17, 1916, *F. T. Hubbard*; sandy wood-road through oak and pine woods and barrens, Barnstable, Sept. 4, 1918, *Fernald & Long*, no. 17569; wood-road in dry, sandy woods, Barnstable, July 15, 1918, *Fernald*, no. 17566. New York: without locality, 1835, *A. Gray*. New Jersey: dry pine woods, Forked River, Ocean Co., Sept. 6, 1908, *Mackenzie*, no. 3841. Virginia: dry soil along roadside near Williamsburg, Sept. 9, 1921, *Grimes*, no. 4351. Michigan: Bay City, 1873, *F. V. Walthausen.* Kentucky: Pine Mt., Harlan Co., Aug., 1893, *Kearney*, no. 219.

The plant here described is apparently the northern and more inland representative of var. *Helleri* (Britton) Blake, which seems to be confined to the coastal plain from Virginia to Florida. In most of the specimens seen, the small, narrow leaves are very characteristic, increasing very little or not at all in size even when the stem attains a height of 4.5 dm. as in the Grimes specimen. This foliar character, though generally useful, is more or less inconstant, even in the same colony. The characters of the glandular pubescence, however, appear to correlate perfectly with natural geographic ranges.

Gnaphalium obtusifolium and its varieties may be distinguished as follows;

a. Stem with white, floccose tomentum, not visibly glandular . . . . *G. obtusifolium.*
a. Stem glandular, not tomentose, or only slightly so. b
  b. Stem glandular-puberulent; leaves usually linear or linear-lanceolate, 1.8–5.3 cm. long, 1.5–7 mm. wide, 6–10 times or more longer than wide; involucral bracts mostly acute . . . . var. *micradenium.*
  b. Stem glandular-villous; leaves usually oblong-lanceolate, 2.5–7 cm. long, 4–13 mm. wide, 4–7 times as long as wide; involucral bracts mostly obtuse . . . . var. *Helleri.*

Gray Herbarium

VACCINIUM ULIGINOSUM AND ITS VAR. ALPINUM.

M. L. Fernald.

Vaccinium uliginosum L. is commonly treated as a circumpolar species which, in America, extends southward to the alpine and subalpine regions of New England and New York and bogs of Oregon. The plant of arctic-alpine range in North America has often been set off on account of its depressed habit and small thick leaves from the typical shrub of European bogs but in none of the differentiations have any characters been pointed out which seem to be more than responses to the exacting summer, and often winter, climatic conditions under which the plant grows in arctic and arctic-alpine eastern America. In comparing the shrub which abounds on the barrens of Greenland, Labrador and Newfoundland and the alpine regions of Quebec and northern New England with the typical European plant a number of points of seemingly real significance come out. In the first place the European is usually a larger and more ascending shrub, and its flowers and fruits are on slender pedicels 3–10 mm. or more long; while the smaller mostly depressed and smaller-leaved shrub of arctic-alpine American distribution has the pedicels very short and often almost obsolete, ranging from 0.1–3.5 mm. in length. In the European plant the horns of the anther are ascending and commonly shorter than the two tubules. This character is well shown in such detailed illustrations as Sturm, Deutschl. Fl. iii. t. 12 (1802), Svensk Botanik, v. t. 331 (1807), English Botany, ed. Syme, vi. t. 878 (1873) or Hartinger & Dalla Torre, Atlas der Alpenfl. iii. t. 313 (1884). Con-

trasted with the European, the shrub of eastern and arctic America has the horns considerably longer and more divergent or even somewhat deflexed at base, but occasionally, as in Greenland material illustrated by Warming,[1] they may be strongly ascending though much longer than the tubules. Reichenbach illustrates[2] the horns of the European shrub as equaling the tubules but such European specimens as the writer has been able to examine agree with those illustrated in the other European works above cited.

The decision whether the shrub of arctic-alpine American range should be treated as a distinct species or as a variety is difficult to reach without a fuller knowledge of the old world shrub and the variability of the horns of its anthers but it is at least a well marked American variety, the first satisfactory name for which seems to be *V. uliginosum*, var. *alpinum* Bigelow.[3] Bigelow first put forward the shrub of the alpine summits of New Hampshire as a species, *V. gaultherioides*[4], but he later considered it a variety of the European *V. uliginosum.*

During the study of the American material of *V. uliginosum* it has become apparent that the shrub of western North America which was separated in 1876 as *V. occidentale* Gray[5] is strikingly like many European specimens and plates of *V. uliginosum*, especially the narrower-leaved extreme of the European shrub. The fruit is commonly slightly smaller than in most European plants but the short ascending horns of the anthers are quite like those of European specimens. *V. occidentale* seems, then, to be essentially *V. uliginosum* of Europe, and the broader-leaved shrub of Oregon, Washington and British Columbia, as well as of the Lake Superior region, is likewise a good match for the European shrub.

The synonymy of var. *alpinum* is as follows:—

V. uliginosum L., var. alpinum Bigel. Fl. Bost. ed. 2: 153 (1824). *V. gaultherioides* Bigel. N. E. Journ. Med. v. 335 (1816). *V. pubescens* Wormsk. in Hornem. Fl. Dan. ix. 2, t. 1516 (1818). *V. salicinum* Cham. Linnaea, i. 525 (1826). *V. uliginosum*, γ *mucronatum* Herder, Pl. Radd. iv. 38 (1872); Gray, Syn. Fl. N. A. ii. pt. 1: 23 (1878). *V. uliginosum*, β. *pubescens* Lange, Consp. Fl. Grönl. 90 (1880) and

[1] Warming, Meddelelser om. Grönland, xxvi.—Repr. as The Structure and Biology of Arctic Fl. Pl. i. fig. 31 (1908).

[2] Reichenb. Ic. Fl. Germ. xvii. t. 1168, figs. iii, & iv. (1855).

[3] Bigelow, Fl. Bost. ed. 2: 153 (1824).

[4] Bigelow, N. E. Journ. Med. v. 335 (1816).

[5] Gray, Bot. Cal. i. 451 (1876).

subsp. *microphyllum* Lange, l. c. 91 (1880). *Myrtillus uliginosa*, var. *microphylla* (Lange) Simmons, Vasc. Pl. Ellesmld. 37 (1906). *M. uliginosa*, var. *pubescens* (Lange) Porsild, Meddel. om. Grönl. 1. 381 (1912).

Writers on Greenland plants maintain var. *pubescens* Lange (not *V. pubescens* Wormsk.) as a good variety, but southward the plants with glabrous and with more or less minutely pubescent foliage do not seem to be satisfactorily separable. In Newfoundland and on the mountains southward they are freely intermingled and can be separated only by a purely mechanical sorting of the two tendencies.

Gray Herbarium

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XXXVIII.

This report includes a series of rough-fruited plants which have been introduced into Massachusetts, mainly in wool. These plants have come up as waifs, mostly around woolen mills. Some of them, like *Echium vulgare,* have been real introductions, and have persisted and spread in enough places to become a permanent part of our flora. Most of them, coming to us from the West, from South America, and from Europe and Asia, have not found conditions here favorable to reproduction. No Australian plant has yet been reported, but the rest of the wool-growing world is well represented.

It is interesting to note that these waifs are not found in the shoe manufacturing towns of Massachusetts. Their favorite haunt seems to be the country about some of the smaller woolen mills, where the wool waste has been spread on the land, instead of being dumped and burned, as is done in the larger places. Many waifs like these have already been reported in other families, especially *Leguminosae* and *Geraniaceae.*

The committee has been fortunate in having access to the W. P. Alcott collection of these plants at the Peabody Academy of Science in Salem. The committee wishes especially to express appreciation of the assistance given by Mr. J. F. Macbride and Mr. I. M. Johnston in the identification of some of the difficult species.

CONVOLVULACEAE.

CONVOLVULUS.

C. arvensis L. Waste places and grassland, occasional.

C. sepium L. Meadows and moist thickets, common.

C. sepium L., var. **pubescens** (Gray) Fernald. Seashore dunes and thickets, common.

CUSCUTA.

C. Cephalanthi Engelm. On *Decodon* and *Impatiens,* Furnace Pond, Pembroke (*C. H. Knowlton & J. R. Churchill,* Sept. 6, 1920).

C. compacta Juss. In wet places, parasitic on various shrubs; Tewksbury, Hudson, Waltham, Wellesley, Natick, Needham and southward.

C. Epilinum Weihe. From a flaxfield, Topsfield (Herb. J. A. Lowell, no date). Specimen in herb. Bos. Soc. Nat. Hist.

C. Gronovii Willd. Wet soil, parasitic on coarse herbs, sometimes on shrubs; common throughout.

C. pentagona Engelm. (*C. arvensis* Beyrich of Gray's Manual, 7th ed. See Am. Journ. Sci. xliii. 340, t. 6, figs. 22–4, 1842.) Abundant on herbs, sandy shores of Winter Pond, Winchester and Massapoag Pond, Sharon; also (waif?) Hillside Ave., Cambridge; rocky woods, climbing *Helianthus divaricatus,* Blue Hill, Canton (*N. T. Kidder,* Aug. 11, 1919).

[*C. trifolia* Babgt. Reported from Winchester on red clover, by A. V. Osmun in Rhodora, v. 291, 1904. Specimen not available for examination.]

IPOMOEA.

I. coccinea L. By railway, Newton (*F. W. Grigg,* Sept. 5, 1896).

I. coccinea L., var. hederifolia (L.) Gray. Spontaneous on dumps along Charles River near Mt. Auburn (*B. L. Robinson,* Aug. 22, 1897; *W. P. Rich,* Aug. 28, 1897).

I. hederacea Jacq. Little Canada dump, Lowell (*C. W. Swan,* Sept. 16, 1884); one plant, spontaneous in yard, Newton (*F. W. Grigg,* Oct. 5, 1911); also in Boston, according to W. P. Rich in Rhodora, x. 153, 1908.

I. lacunosa L. Little Canada dump, Lowell (*C. W. Swan,* Sept. 11, 1884). Specimen in herb. N. E. Botanical Club.

I. purpurea (L.) Roth. Gardens and waste places, occasional.

(Two other species listed by Dr. C. W. Swan in Dame & Collins, Fl. Middlesex Co., 77, 1888, are poor specimens, probably hybrids, impossible to identify exactly.)

POLEMONIACEAE.

GILIA.

G. INCONSPICUA Dougl. Woolwaste, N. Chelmsford (*W. P. Alcott*, June 23, 1879). Specimen in herb. Peabody Acad. Sci. Adventive from California.

G. LEUCOCEPHALA Gray. Woolwaste, N. Chelmsford (*W. P. Alcott*, May, 1879). Specimen in herb. Peabody Acad. Sci. Adventive from California.

G. MULTICAULIS Benth. Dump, West Cambridge (*M. L. Fernald & B. Long*, Aug. 28, 1913). Specimen in herb. N. E. Botanical Club. Native of California.

G. TRICOLOR Benth., var. LONGIPEDICELLATA Greenman in Deane, RHODORA, vi. 154, 1904. On wool refuse, Lawrence, June 14, 1900, *John A. Collins, Jr.* Originally described from Mr. Collins's specimen, now in the Gray Herbarium. The variety is now known also from California, whence it was doubtless introduced. Reported in RHODORA, iii. 92, 1901, as *G. androsacea* Steud.

PHLOX.

P. PANICULATA L. Persistent or escaped from gardens at a few places.

P. SUBULATA L. Common in old cemeteries and gardens; frequently escaped from cultivation in sandy soil.

POLEMONIUM.

P. OCCIDENTALE Greene. One plant, border of pond, E. Gloucester, July, 1914. Specimen in herb. W. Deane. Adventive from Colorado and California.

HYDROPHYLLACEAE.

ELLISIA.

E. NYCTELEA L. Border of Parkway, Everett (*W. P. Rich*, June 3, 1902). Specimen in herb. N. E. Botanical Club.

HYDROPHYLLUM.

H. virginianum L. Dedham (?) (*E. H. Hitchings*, September, 1883). Purgatory Swamp, Norwood (*N. T. Kidder*, June 9, 1883); escaped in open woods, Milton (*N. T. Kidder*, June 20, 1917).

PHACELIA.

P. brachyloba Gray. Woolwaste, N. Chelmsford (*W. P. Alcott*, 1878); S. Boston flats (*C. E. Perkins*, June 25, 1879). A waif from California.

P. magellanica (Lam.) Cov. Woolwaste, N. Chelmsford (*W. P. Alcott*, 1878). Specimen in herb. Peabody Acad. Sci. Adventive from western America.

P. minor (Harvey) Thell., var. Whitlavia (Gray) Macbride. Woolwaste, N. Chelmsford (*W. P. Alcott*, 1878). Specimen in herb. Peabody Acad. Sci. A waif from California.

P. tanacetifolia Benth. Woolwaste, N. Chelmsford (*W. P. Alcott*, June 10, 1879); spontaneous in garden, Newton (*Helen E. & F. W. Grigg*, July 24, 1892). A waif from California or northward.

[No specimen is available of Dr. T. Morong's *P. congesta* Hook. reported from Cambridge in Dame & Collins, Fl. Middlesex Co. 76, 1888.]

BORAGINACEAE.

AMSINCKIA.

A. barbata Greene. (*A. intermedia* Fisch. & Meyer in Dame & Collins, Fl. Middlesex Co., 75, 1888. See J. F. Macbride, in Rhodora, xviii. 27, 1916.) Chase's woolen mill, Lowell (*Miss M. Swan*, June 30, 1880). Specimen in herb. N. E. Botanical Club. Adventive from Pacific coast.

A. Douglasiana DC. Woolwaste, N. Chelmsford (*W. P. Alcott*, 1878). Specimen in herb. Peabody Acad. Sci. Native of California.

A. Menziesii (Lehm.) Nels. & Macbride. Abandoned henyard, Sherborn (*Miss M. L. Loomis*, June 10, 1919). Specimen in herb. Gray. Native of western United States and adjacent Canada.

ANCHUSA.

A. azurea Mill. (*A. italica* Retz.) Vacant lot near South Ferry, E. Boston (*Dr. Franklin Dexter*, July 28, 1917; July 15, 1918). "In 1917 the field was blue with it. In 1918 the field was yellow with

mustard, and the second specimen was secured with difficulty." Specimen in herb. N. T. Kidder. Native of Mediterranean region.

A. OFFICINALIS L. See RHODORA, xviii. 50–51, 1916. Waste land, rather common in Fenway district of Boston since 1897; dump area, Cambridge (*R. A. Ware & F. W. Grigg*, Oct. 11, 1919); W. Cambridge (*F. S. Collins*, Aug. 20, 1911).

ASPERUGO.

A. PROCUMBENS L. Adventive in waste land; Newburyport, Salem, Malden, Somerville, S. Boston.

BORAGO.

B. OFFICINALIS L. Persistent in an old garden at Danvers (*J. H. Sears*, Aug. 10, 1904); Lowell (*J. A. Lowell*, 1848). Introduced from southern Europe or western Asia for its handsome flowers.

CRYPTANTHA.

C. INTERMEDIA (Gray) Greene. Woolwaste, N. Chelmsford (*W. P. Alcott*, 1878). Specimen in herb. Peabody Acad. Sci. Native of California and adjacent Mexico.

CYNOGLOSSUM.

(*C. boreale* Fernald. There is a specimen in the herbarium of the Boston Society of Natural History with the indefinite label "Boston, U. S. A., 1822. Rec'd from Dr. Boott, 11 Dec. 1822.")

C. MICROGLOCHIN Benth. Rubbish heap, Cambridge (*W. Deane*, Sept. 24, 1884). Specimen in herb. W. Deane. Native of the western Himalaya Mts.

C. OFFICINALE L. Waste places, occasional west and north of Boston, especially near woolen mills.

ECHIUM.

E. AUSTRALE Lam. About a dump, Cambridge (*M. L. Fernald & Bayard Long*, Aug. 28, 1913). Specimen in herb. N. E. Botanical Club. Native in the Mediterranean region.

E. VULGARE L. Waste places especially near woolen mills; frequent west and north of Boston, also at Brockton.

HELIOTROPIUM.

H. ANCHUSAEFOLIUM Poir. Vacant lots, Huron Ave., Cambridge (*E. F. Williams*, Sept. 3, 1910). Specimen in herb. N. E. Botanical

Club. Weed in garden, Milton (*N. T. Kidder*, Oct. 12, 1883, to date). Specimen in herb. N. T. Kidder. Native of Argentina.

H. europaeum L. Woolwaste, Graniteville, Westford (*F. Nickerson*, no date); rubbish heap, Cambridge (*W. Deane*, Sept. 26, 1884); weed of years' standing in Botanical Garden, Cambridge (*R. Cameron*, Sept. 16, 1918).

H. indicum L. Rubbish heap, Cambridge (*W. Deane*, Oct. 5, 1884). Specimen in herb. W. Deane. Native of the Old World Tropics.

LAPPULA.

L. echinata Gilib. Waste ground especially near woolen mills; frequent, especially north and west of Boston.

L. virginiana (L.) Greene. Moist shady places, frequent from Milton and Framingham northward.

LITHOSPERMUM.

L. arvense L. Dry soil, frequent.

L. latifolium Michx. Adventive at Middleton (*A. S. Pease*. July 12, 1902). Specimen in herb. N. E. Botanical Club.

LYCOPSIS.

L. arvensis L. Introduced in cultivated soil, Essex and Ipswich (*Wm. Oakes*, no date); Georgetown (*Mrs. C. N. S. Horner*, July 22, 1882); Lowell (*F. Nickerson*, no date); about the Botanic Garden, *wild* but hardly naturalized, Cambridge (*E. Tuckerman, Jr.*, no date).

MYOSOTIS.

M. arvensis (L.) Mill. Open woods and grassland, rare.

M. laxa Lehm. Swamps and wet places, frequent.

M. micrantha Pallas. Adventive in dry soil at Nahant, Revere, Weston and Milton.

M. scorpioides L. Brooks and swamps, occasional; usually very abundant where found.

M. sylvatica Hoffm. Waif at edge of lawn, Adams Street, Milton (*N. T. Kidder*, June 12, 1920). Native of the north temperate region.

M. virginica (L.) B. S. P. Dry soil, common.

SYMPHYTUM.

S. ASPERUM Lepechin. See J. F. Macbride, RHODORA, xviii. 23–5, 1916. Salem (*J. H. Sears*, June 10, 1904); Andover (*A. S. Pease*, July 6, 1901); Sherborn (*Miss M. L. Loomis*, July, 1909); Dump, S. Natick (*K. M. Wiegand & M. Heatley*, June 30, 1908); Lexington, well established near Munroe Station, according to M. P. Cook in RHODORA, i. 82, 1899.

S. OFFICINALE L. Moist places, frequent.

VERBENACEAE.

VERBENA.

V. BRACTEOSA Michx. Waste lands, especially near textile mills; Lowell, Malden, Cambridge, S. Boston.

V. hastata L. Swamps and wet places, common throughout.

V. HISPIDA Ruiz & Pavon. About dumps, Cambridge (*A. S. Pease*, Oct. 16, 1908; *W. Deane et al.*, Aug. 28, 1913). A South American waif.

V. OFFICINALIS L. Rowley (*Wm. Oakes*, no date); S. Boston (*C. E. Perkins*, Sept. 27, 1880).

V. STRICTA Vent. Lawrence, waste heap (*M. E. Gutterson*, Aug. 6, 1902; *A. S. Pease*, Sept. 23, 1902).

V. urticaefolia L. Roadsides and moist places, common throughout.

C. H. KNOWLTON } *Committee on Local Flora.*
WALTER DEANE }

CORALLORRHIZA MACULATA RAF.

O. A. FARWELL.

In RHODORA for August, 1922, Dr. H. H. Bartlett, of the Botanical Garden, University of Michigan, Ann Arbor, presents a highly interesting paper on the color types of this species, attributing them to anthocyanins and glucosides of the flavonal group and maintaining that these types are genetical entities and not mere variations due to environment, and therefore of greater permanence and categorical value. The specific type is named var. *punicea*; the yellow type var. *flavida* (Peck) as a new combination; and the intermediate

form, which he calls the brown form, as a new var., *fusca*. In view of the widely scattered publications relating to the taxonomy of plants, it is not at all surprising that Dr. Bartlett missed a reference or two in his search of the literature pertaining to the subject. In Torreya Vol. 16, page 231 for October, 1916, Prof. T. D. A. Cockerell published the new combination for the yellow type. In the Michigan Academy of Science, 19th Report for 1916, page 247, I published the brown type as *C. maculata* Raf. var. *intermedia*. Dr. Bartlett's var. *fusca*, therefore becomes a synonym of var. *intermedia*. The plants upon which the two varietal names for the brown form are based came from the same locality, Copper Harbor, Keweenaw Co., Mich. The only difference that I can detect from Dr. Bartlett's description of the var. *fusca* is that Mr. Hermann's specimens had spotted flowers as well as spotted lips while my specimens had purplish spots on the lips only. This slight difference, however, can scarcely be considered of such importance as to maintain the two as of different varieties.

Department of Botany, Parke, Davis & Co., Detroit, Mich.

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DUMONTIA FILIFORMIS ON THE NEW ENGLAND COAST.

William Albert Setchell.

In the years 1920 and 1921, Mrs. Setchell and myself attempted to determine something of the algal flora in the vicinity of Newport, Rhode Island, as regards its seasonal periodicity. Collections were planned for each month of the year, but, for reasons of inclement weather coincident with times of extreme low tide intervals, they could not be carried out with the regularity desired. We selected a locality along the outer Beach Road, about half-way between Graves Point and Prices Neck (cf. U. S. C. & G. S., chart No. 353, issue of Mar., 1918). Two jutting points enclosing a small rocky and pebbly beach, at the very roadside, offer here an exceptionally good and convenient collecting place, directly exposed to the waters of the Atlantic Ocean. On the easterly rocky point, composed of a flakey, micaceous schist, the different belts of the littoral region were well represented and, being provided with numerous small, shallow tide-pools, afforded excellent habitats for many small species, especially during the spring and early summer months. Our collections covered the months from March to September, with the exception of August, when inclement weather at the times of favorable low tides interrupted the sequence.

At this locality, the extreme maximum temperature of the ocean waters seldom, if ever, exceeds 20° C., although that of the shallow tide-pools may exceed 30° C. for short intervals of time. The summer

algal flora of the sublittoral belt, therefore, is largely of the type of the northern New England coast in summer and its winter and spring flora may even include spring or summer species normal to Labrador and Greenland coasts. The plants of the tide-pools are numerous in spring and even in early summer, but are few in middle and late summer, since the temperature of the water rises to that typical of the waters of Long Island Sound and those to the south without affording other physical conditions adapted to the growth of species of those regions. The tide-pool algal flora of summer, therefore, consists only of a few perennial species which can endure such higher temperatures in a state of quiescence. It is my intention to publish some detailed notes as to these relations when the collections have been more completely worked over.

One of the interesting and important finds of our collecting was *Dumontia filiformis* (Huds.) Grev., a species, until comparatively recently, unknown from the Atlantic Coast of North America. At Newport it grows in the shallow tide-pools, often filling them completely, and occurs from the latter part of March until the earlier portion of July. By the last week in March the plants were well formed, but no organs of reproduction were found. Presumably these plants were all gametophytes. About the middle of April plants were found with antheridia and young procarpic branches. About the middle of May plants with mature cystocarps were common as were also those with well formed but undivided tetrasporangia. About the middle of June only tetrasporic plants were found and these lasted until the middle of July in 1920, although mostly old and becoming disorganized. In 1921, however, on July 6, no plants were to be seen in the tide-pools, but there had been heavy rains for several days previously, which may have hastened their disappearance.

Dumontia filiformis was first detected on the Atlantic Coast of North America at South Harpswell, Maine, by Grace A. Dunn, in June, 1913, and was collected by Roland Thaxter at Kittery Point, Maine, in the spring months of 1914. Plants collected by Thaxter in May, 1914, were distributed in the Phycotheca Boreali-Americana (Fasc. xliii, No. 2149) in April, 1916. In two copies examined these plants show young (undivided) tetrasporangia. Dunn has presented accounts of the vegetative structure and reproduction of the South Harpswell plants in two papers (Plant World, vol. 19, pp. 271–281, figs. 2, 1916, and Bot. Gaz., vol. 63, pp. 425–467, pl. 19–22, and text fig. 1–7, 1917).

The appearance of this plant, long sought for, on the eastern coast of North America, in such abundance at two localities on the Maine coast suggests, as Dunn has indicated (1917, pp. 425 and 459), that it is a recent introduction. The vicinity of the Harpswell Laboratory had been carefully explored in the early part of July by Frank S. Collins for six seasons (viz., 1902–1905 and 1908–1909) without Dumontia having been detected. Dunn, consequently, suggests that it had become established somewhere between 1909 and 1913. The discovery of *Dumontia filiformis*, well established, on a portion of the New England coast so remote from the Maine coast as Newport, R. I., seems to indicate that it has been much longer in residence on the New England coast, but has been overlooked. In its July state it resembles closely passé plants of *Halosaccion ramentaceum* (L.) Ag., and may have been passed over even by such an experienced collector as Collins as unworthy of closer examination.

Dumontia filiformis, formerly credited with a wide distribution, occurs on the Atlantic coasts of Europe, on the northeast and northwest coasts of North America, and on the northeast coast of Asia. Cotton (Journ. Linn. Soc., Bot., vol. 43, p. 202) has examined the specimens from the Falkland Islands and from the New Zealand region which have been credited to *Dumontia filiformis* and finds that they are all different, even generically. As he says (loc. cit.),—"There is now no evidence that *Dumontia filiformis* occurs at all in the Southern Hemisphere."

On the Atlantic coast of Europe *Dumontia filiformis* ranges from the region of the English Channel to the northern coasts of Norway and thence east to the Murman Sea, but in more northern waters is only occasional and inhabits sheltered localities. Since it grows in shallow tide-pools, the water surrounding it is commonly raised in temperature by insolation. It occurs on the southwest coast of Iceland. It is still a question as to whether it is to be classed as an inhabitant of the west shore of Greenland. The specific identity of the plant of Bering Sea has been called into question by Kjellman (Om Beringh afvets Algflora, p. 30, 1889), but the relationship is very close, if not identical, with *Dumontia filiformis*. The plant of the Kurile Islands, Asia, is similar to that of the Bering Sea coasts of North America.

Since there has seemingly been confusion between *Dumontia filiformis* (Huds.) Grev. and *Halosaccion ramentaceum* (L.) Ag. (cf.

Rosenvinge, Grønlands Havalger, p. 786, 1893), this tendency to confuse the two plants while collecting may explain the unnoted presence of the former species on the coast of New England previous to 1913. The discovery at Newport, R. I., may further indicate that additional localities, both north and south, remain to be discovered. The seasonal behavior indicates the temperatures of 10° C. to 20° C. as those critical for the fruiting of this species, covering both the production of cystocarps and of tetrasporangia and suggesting that 10° C. to 15° C. may be the temperatures favorable for cystocarpic reproduction (gametophyte) and 15° to 20° C. for tetrasporic reproduction (sporophyte).

It is to be noted that *Dumontia filiformis* is credited with possessing a prostrate perennial basal portion (cf. Reinke, Algenfl. westl. Ostsee, p. 204, 1889, and Brebner, Journ. Linn. Soc., vol. 30, pp. 436–443, pl. 35, 36, 1895). Dunn neither makes mention of this in the New England plant nor reference to the various accounts of its significance, persistence, and special structure, although her figures (loc. cit., pl. 19, figs. 8, 9) of the holdfast indicate that her plants possessed a basal portion of more complicated structure than that of an ordinary discoid holdfast. My own specimens show something of this prostrate thallus, but it is desirable that our New England plants be studied more in detail in this respect.

Brebner (loc. cit.) and Oltmanns (Morph. u. Biol. d. Algen, I, p. 573, fig. 356 a, 1904) have given a different interpretation to the structure of the apical meristem of the European plant from that of the American plant as indicated briefly by Dunn (loc. cit., p. 436), but her figure (pl. 19, fig. 11), although taken in all probability from a fairly mature branch, is more consistent with what is indicated for the European *Dumontia filiformis* than the type of apical meristem represented by *Furcellaria fastigiata* (cf. Oltmanns, loc. cit., p. 545, fig. 329).

The points as to identity in structure and development of the plants ascribed to *Dumontia filiformis* of the Atlantic Coast of Europe and North America are not completely settled as yet as I have shown by indicating our lack of knowledge as to details of agreement or difference in connection with the prostrate thallus and the apical meristem. As to the specific identity of the plants of the North Pacific with those of the North Atlantic, the question has been raised by Kjellman (loc. cit.), as indicated previously. There seem possibly

to be differences in details of vegetative structure and in the size of carpospores and tetraspores between the two sets of plants, but examination of a large series of specimens is required to make this certain. This question must remain to be settled in the future.

University of California.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XXXIX.

LABIATAE.

AGASTACHE.

A. scrophulariaefolia (Willd.) Ktze. Rich woods, Oak Island, Revere (*Wm. Boott*, Aug. 16, 1861; other collectors down to 1908). A rare plant of rich woods, occasional in Berkshire county and Connecticut; this station probably now extinct.

AJUGA.

A. reptans L. Escaped on bank, Cambridge (*W. Deane*, June 6, 1910); spontaneous under shrubs in garden, S. Hanover (*Mrs. E. A. Josselyn*, June 17, 1904); reported from moist meadow in N. Easton by C. Blomberg in Rhodora, iv. 14, 1903.

BALLOTA.

B. nigra L. Dump, Cambridge (*W. Deane*, Oct. 10, 1885); Hull (*C. E. Perkins*, July 15, 1881); also Chelsea and E. Boston, no data.

[*Blephilia ciliata* Raf. is reported by Dr. Thomas Morong from Ashland, in Dame & Collins, Fl. Middlesex Co., 72, 1888. As this is the only record for this plant in Massachusetts from east of the Connecticut Valley, it is probably a casual introduction, and not a native plant at Ashland.]

COLLINSONIA.

C. canadensis L. Rich woods, rare; Oak Island, Revere, Ipswich, Georgetown, Haverhill, Dracut.

DRACOCEPHALUM.

D. parviflorum Nutt. Waste places, rare; W. Cambridge (*A. S. Pease*, July 4, 1908); Needham (*T. O. Fuller*, July 10, 1899); S. Hanover (*Mrs. E. A. Josselyn*, June 16, 1899).

D. thymiflorum L. See Rhodora, xiii. 212, 1911. Woolwaste dumping ground, Westford (*Miss E. A. Fletcher*, June 27, 1911). Specimen in herb. Bos. Soc. Nat. Hist. A waif from Northern Europe and Siberia.

GALEOPSIS.

G. Ladanum L. Dry sandy ridge above beach at Point of Pines, Revere, also at edge of Oak Island (*Wm. Boott*, September, 1851; other collectors to 1911). Probably extinct, as the area is now largely covered by houses.

G. Tetrahit L. Waste places, apparently rare; Ipswich, Manchester, Gloucester, Essex, Dedham, Sherborn.

G. Tetrahit L., var. bifida (Boenn.) Lejeune & Courtois. See Rhodora, xii. 141–2, 1910. Waste places in moist soil, common.

HEDEOMA.

H. hispida Pursh. Garden weed, Reading (*W. H. Manning*, July 6, 1887). Specimen in herb. N. E. Botanical Club.

H. pulegioides (L.) Pers. Dry ledges and pastures, common.

HYSSOPUS.

H. officinalis L. Roadside near farm, Burlington (*T. O. Fuller*, Aug. 20, 1893; other collectors till 1899); escape, Georgetown (*Mrs. C. N. S. Horner*, August, 1877).

LAMIUM.

L. album L. Escaped from gardens at Salem, Saugus, Cambridge and Milton.

L. amplexicaule L. Weed in gardens and grassland, frequent. A plant with cleistogamous flowers was found in Cambridge, Oct. 23, 1908, by Prof. M. L. Fernald.

L. hybridum Vill. See Rhodora, xi. 55, 1909. Abundant in cultivated ground and grassy border, Hingham (*C. J. Sprague*, July–October, 1889). Specimen in herb. Gray.

L. maculatum L. Escaped from cultivation; Medford (*W. J. Child*, May, 1886); Milton (*C. H. Morss*, Aug. 5, 1894).

LEONURUS.

L. Cardiaca L. Waste places, especially in rich soil, common.

LYCOPUS.

L. americanus Muhl. Low ground, common northward, but no reports from southern towns, except Cohasset.

L. EUROPAEUS L. Waste ground, Cambridge, Oct. 6, 1894 et seq. Specimens in herb. Gray and Wellesley College.

L. rubellus Moench. Low ground, frequent.

L. sessilifolius Gray. Gravelly shore of Monponsett Pond, Halifax (*Wm. Boott*, Sept. 23, 1870; *C. H. Knowlton & W. P. Rich*, Sept. 23, 1906).

L. uniflorus Michx. Swamps and wet places, common throughout.

L. virginicus L. Wet shores and swampy places, frequent.

MARRUBIUM.

M. VULGARE L. Waste land, occasional (13 stations).

MELISSA.

M. OFFICINALIS L. Escaped from cultivation at Georgetown, Newbury and Cambridge.

MENTHA.

M. arvensis L. Swamps and wet thickets, common, but not reported from southern towns.

M. arvensis L., var. **canadensis** (L.) Briquet. Frequent.

M. CARDIACA Gerarde. Roadsides and moist places at Chelmsford, Lincoln, Weston, Cambridge and West Roxbury.

M. GENTILIS L. Low ground; Lexington, Lincoln, Belmont, Brookline.

M. PIPERITA L. Brooks and moist places, common.

M. SPICATA L. Moist soil, frequent.

MONARDA.

M. CITRIODORA Cerv. Parker River mills, Georgetown (*Mrs. C. N. S. Horner*, no date). Specimen in herb. N. E. Botanical Club.

M. DIDYMA L. Introduced by roadsides and in open woods, rare.

M. FISTULOSA L. Rich woods and pastures and old places, occasional.

M. FISTULOSA, L., var. RUBRA Gray. Concord (*E. S. Hoar*, August, 1879); roadside, Wellesley (*F. W. Hunnewell*, July 16, 1896).

M. mollis L. Woods and open places at eight scattered stations.

M. punctata L. Parker River Mills, Newbury (*Mrs. C. N. S. Horner*, September, 1885). Specimen in herb. N. E. Botanical Club.

NEPETA.

N. Cataria L. Pastures and waste ground, common throughout

M. hederacea (L.) Trevisan. Moist places, occasionally in woods, common.

M. hederacea (L.) Trevisan, var. parviflora (Benth.) Druce. In similar places at eight stations. See Rhodora, xxiii. 289, 1921.

OCIMUM.

O. Basilicum L. Belmont (*Wm. Booth*, Aug. 21, 1866). Specimen in herb. N. E. Botanical Club. A garden annual introduced from India.

ORIGANUM.

O. vulgare L. Georgetown (*Wm. Oakes*, no date); specimen in herb. Gray, Bos. Soc. Nat. Hist. and Peabody Acad. Sci. Also reported at Hingham by T. T. Bouvé.

O. marjorana L. S. Boston (*C. E. Perkins*, Aug. 12, 1878); specimen in herb. N. E. Botanical Club. Native in the Mediterranean countries.

PERILLA.

P. frutescens (L.) Britton, var. **crispa** (Bentham) Deane n. comb.[1] Waste place, Arlington (*M. L. Fernald*, Sept. 28, 1908). A native of China and Indo-China.

PHYSOSTEGIA.

P. virginiana (L.) Benth. Roadsides, occasional.

PRUNELLA.

P. vulgaris L. See Rhodora, xv. 179–186, 1913. Fields and waste places, occasional.

P. vulgaris L., forma albiflora (Bogenhard) Britton. (Vide supra.) Allendale woods, Brookline (*E. & C. E. Faxon*, Aug. 6, 1885).

[1] Perilla frutescens (L.) Britton, var. **crispa** (Benth.) Deane n. comb.
Dentidia nankinensis Lour. Fl. Cochin. 369 (1790).
Perilla ocymoides β crispa Benth. in DC. Prod. xii. 164 (1848).
Perilla nankinensis Descne., Rev. Hort. ser. 4, i. 61 (1852).
Perilla ocymoides, var. *nankinensis* Voss in Vilmorin, Blumengärtnerei 846 (1896).
Perilla frutescens nankinensis Britton, Mem. Torr. Bot. Club v. 277 (1894).
The name *crispa* must be used for this variety because it is the earliest name in the varietal category applied to the plant.

P. VULGARIS L., var. **lanceolata** (Barton) Fernald. (Vide supra). Fields and moist places, common.

P. VULGARIS L., var. **lanceolata** (Barton) Fernald, forma **candida** Fernald. Open field, Acton (*W. Deane,* June 27, 1885).

P. VULGARIS L., var. **lanceolata** (Barton) Fernald, forma **iodocalyx** Fernald. Fields and moist places, common.

PYCNANTHEMUM.

P. clinopodioides T. & G. Near riverbank, Concord (*H. A. Purdie,* Aug. 26, 1886); specimen in herb. W. Deane; Blue Hill, Milton (*C. E. Faxon,* Aug. 11, 1884; Aug. 17, 1887); specimens in herb. Gray.

P. flexuosum (Walt.) BSP. Dry fields and pastures, well distributed throughout.

P. incanum (L.) Michx. Dry rocky woods, frequent in central towns; apparently rare in Essex Co. and the southern towns.

P. muticum (Michx.) Pers. Roadsides and fields in moist soil, common.

P. verticillatum (Michx.) Pers. Moist fields and open woods, rare; Andover, Billerica, Westford, Nagog Pond [Acton?], Sherborn.

P. virginianum (L.) Durand & Jackson. Fields and roadsides, frequent except in south shore towns.

SALVIA.

S. SCLAREA L. Rubbish heap, Cambridge (*W. Deane,* July 23, 1886); specimen in herb. W. Deane.

S. TILIAEFOLIA Vahl. Rubbish heap. Cambridge (*W. Deane,* Oct. 5, 1885; *M. L. Fernald,* Sept. 26, 1908; Aug. 28, 1913). A Mexican waif.

S. VERTICILLATA L. Field, Sharon (*Miss M. L. Loomis,* Aug. 24, 27, 1908); specimens in herb. Gray and N. E. Botanical Club. Native of Europe and Asia.

SATUREJA.

S. ACINOS (L.) Scheele. Boylston Terrace, W. Medford (*C. H. Morss,* June 21, 1898); specimen in herb. N. E. Botanical Club.

S. HORTENSIS L. Escaped from gardens, rare; Lowell, Charlestown, Boston, Milton.

S. vulgaris (L.) Fritsch. Dry fields and open woods, rare; at ten widely scattered stations.

SCUTELLARIA.

S. altissima L. Naturalized at Arnold Arboretum, Boston, foot of Hemlock Hill (*A. Rehder*, Sept. 20, 1913); specimen in herb. N. E. Botanical Club.

S. epilobiifolia Hamilton. (*S. galericulata* of Gray's Manual, 7th ed. See Rhodora, xxiii. 85–6, 1921). Swamps and wet shores, rather common throughout.

S. lateriflora L. Swamps and wet woods, common throughout.

STACHYS.

S. ambigua (Gray) Britton. Moist soil, frequent in western towns also tidal bank of Merrimac River, Newburyport.

S. arvensis L. Freight yard, Somerville (*A. S. Pease*, Oct. 20, 1903); spontaneous in garden, Dorchester (*W. Deane*, Oct. 24, 1884; *J. R. Churchill*, Oct. 18, 1885).

S. Betonica Benth. One single root in a wood, Newton (*C. J. Sprague*, no date.) Specimen in herb. Bos. Soc. Nat. Hist.

S. hyssopifolia Michx. Salem (*Wm. Edwards*, no date); specimen in herb. Wellesley College. "Appeared mysteriously on the wall at Paradise, Salem, 1824 (Dr. Charles Pickering)," according to J. Robinson, Fl. Essex Co., 83, 1880. Wet shore, Bellingham (*E. & C. E. Faxon*, Aug. 24, 1894; *C. H. Knowlton & W. P. Rich*, Aug. 2, 1908).

S. palustris L. Moist fields, also borders of salt marsh, rare; Ipswich, Burlington, Woburn, Quincy.

S. palustris L., var. **homotricha** Fernald. Byfield [Newbury], Danvers, Reading.

S. tenuifolia Willd., var. **aspera** (Michx.) Fernald. Wet shores and moist places, frequent inland.

TEUCRIUM.

T. canadense L. Moist soil and waste places, rare.

T. canadense L., var. **littorale** (Bickn.) Fernald. Beaches and borders of salt marshes, all along the coast.

T. occidentale Gray. Vacant lot, S. Boston (*C. H. Knowlton*, July 29, 1908).

T. occidentale Gray, var. **boreale** (Bickn.) Fernald. Rocky sea shores at Rowley, Gloucester and Rockport.

THYMUS.

T. ovatus Mill. Escaped, Boxford (*Mrs. C. N. S. Horner,* no date). Specimen in herb. N. E. Botanical Club. A native of central Europe.

T. Serpyllum L. Dry fields and pastures, occasional.

T. vulgaris L., var. verticillatus Willk. & Lge. Grassy bank, Wellesley (*K. M. Wiegand,* June 2, 1910). An Italian mountain plant, found also in Corsica.

TRICHOSTEMA.

T. dichotomum L. Dry fields and pastures in sandy soil, very common throughout. White-flowered forms from Revere and Newton.

C. H. Knowlton } *Committee on Local Flora.*
Walter Deane }

THE ESTUARINE BIDENS OF THE MIRAMICHI.

M. L. Fernald.

The peculiar endemic or isolated members of the genus *Bidens* which have been discovered in the tidal reaches from Maryland northward to the estuary of the St. Lawrence have been discussed at various times in the pages of Rhodora and we have learned that every considerable estuary in this region is likely to harbor some interesting plant of the genus. It was therefore gratifying, upon stopping to spend the night at Newcastle, New Brunswick, during a return trip from the Gaspé Peninsula with Professor Arthur Stanley Pease, to have our twilight stroll above the city, along the tidal shore of the Miramichi, rewarded by the discovery of another of these colpophilous plants. The Miramichi plant stands exactly between *Bidens hyperborea,* var. *cathancensis* Fernald, Rhodora, xx. 149 (1918) of southern Maine and var. *gaspensis* Fernald, l. c. 150, of the Gaspé river-mouths. In its comparatively thin sharply toothed and acuminate leaves, attenuate foliaceous bracts and long awns the Miramichi plant is like the former, but in its conspicuously decumbent or arched-ascending branches, few-flowered heads with only 3–5 very long and mostly serrate bracts it suggests the latter. This plant on account of its habit may be called

Bidens hyperborea Greene, var. **arcuans**, n. var., caulibus 2–3 dm. altis ramosis, ramis imis decumbentibus vel arcuato-adscendentibus; foliis tenuibus attenuato-acuminatis argute serratis, primariis 0.6–1.3 dm. longis costa subtus prominente; bracteis involucri exterioribus 3–5 lineari-lanceolatis acutis plus minusve serratis 2–8 cm. longis; floribus 15–30; achaeniis exterioribus 5–5.6 mm. longis, interioribus 8.5–9.5 mm. longis 1.8–2.4 mm. latis aristis marginalibus 4–4.7 mm. longis.

Stems 2–3 dm. tall, branching; the lower branches decumbent or arcuate-ascending; leaves thin, attenuate-acuminate, coarsely sharp-serrate; the primary 0.6–1.3 dm. long, with the midrib prominent beneath; outer involucral bracts 3–5, linear-lanceolate, acute, more or less serrate, 2–8 cm. long: flowers 15–30: outer achenes 5–5.6 mm. long; the inner 8.5–9.5 mm. long, 1.8–2.5 mm. wide, with the marginal awns 4–4.7 mm. long.—New Brunswick: tidal mud of Miramichi River, Newcastle, July 30, 1922, *Fernald & Pease*, no. 25,321 (type in Gray Herb.).

Gray Herbarium

HABENARIA HYPERBOREA IN RHODE ISLAND.

Albert E. Lownes.

Habenaria hyperborea (L.) R. Br. is so distinctly a plant of northern distribution, that it was with considerable surprise that the present writer collected the species in the town of Lincoln, R. I., not five miles north of the city of Providence. With but two exceptions the data at the writer's command show no records for the plant in the three southern New England states east of the Connecticut River,—at Amherst, Mass. (Ames: Orchidaceae Fasc. IV, 86) and at Bolton, Conn. (Graves *et al*: Cat. of the Flowering Plants and Ferns of Conn. 130). Baldwin (Orchids of New England) lists it as occurring at Concord, Mass., but there appears to be no existing proof of its collection at that station. The present record seems, therefore, to extend the range of the species in New England far to the southeastward.

The station where *H. hyperborea* was collected attracted the writer's attention early in the year 1922 by the large number of orchids which were to be found in a very small compass. Within a radius of less than two hundred yards eleven other species were collected, several in abundance. The rarest of these (in this instance) was curiously *Cypripedium acaule*, there being but a single plant. *H. viridis* var. *bracteata*, *H. psycodes*, *Spiranthes cernua*, *S. gracilis*,

Corallorrhiza maculata, and *C. odontorhiza* were all found in quantity; and about twenty-five plants were discovered of each of the following: *Orchis spectabilis, Cypripedium pubescens,* and *Liparis Loeselii.*

Many other plants of interest were present, too, in greater or lesser abundance. Even to list them all would take far more space than the writer has at his disposal, but two or three should be placed on record:

Botrychium ramosum and *B. angustisegmentum* were both found, several plants of the former.

Cardamine parviflora was common in clefts of a limestone ledge.

Aralia hispida, common on rocky slopes.

Hepatica americana, which is now almost extinct in Rhode Island, was found in abundance.

Specimens of all the above except *Cypripedium pubescens* and the last two species are in the author's herbarium.

A NEW STATION FOR DAPHNE.

Harriet A. Nye.

While teaching in the town of Smithfield, in the southern part of Somerset County, last spring, my attention was attracted, early in April, by a shrub I had never before seen. It proved to be somewhat puzzling to analyze, since I knew nothing of its leaves or fruit, but its resemblance to Dirca, which I found the year previous, assisted me in identifying it as *Daphne Mezereum* L., a plant which has been previously reported from but one other station in Maine (see Rhodora, Vol. XV, page 203).

As it was obviously an introduced plant, I was at once interested to account for its presence here and surmised that it had become naturalized from plants originally set in a small cemetery on the hillside near by. Later investigation proved the surmise to have been correct. A Mr. Silas Hitchcock, whose death occurred in Massachusetts in 1867, was brought to this cemetery for burial and his widow planted this shrub upon his grave. It is now thoroughly established along the roadsides for some distance; I found one good clump of it about a third of a mile from the original plants, yet it can hardly be considered to have spread to such an extent as to become troublesome when it is remembered that it has been over fifty years since it was planted there.

The low-growing shrub is of neat growth, bearing before the leaves appear, very pretty and fragrant pink blossoms, the individual flowers somewhat resembling Lilacs, and remaining in perfection almost a month before fading. The foliage is also neat and in June and July the bright red berries ripen, making the plant very attractive both in flower and fruit. It seems to me strange that it is not more widely planted.

Fairfield Center, Maine.

Cladonia Beaumontii in Massachusetts.—It has been customary to regard *Cladonia Beaumontii* (Tuck.) Wainio (the *Cladonia Santensis* b *Beaumontii* of Tuckerman)[1] as purely southern in distribution. It is recorded in the "Synopsis" from but two States, Alabama and North Carolina and, while this range has been somewhat extended since the publication of that work, it has not heretofore been found, so far as appears, from north of the limits given.

The plant is however, more or less common though local in Wareham, Massachusetts, where it occurs usually on sandy loam, and occasionally on decaying and decayed wood, in dry, mixed, rather open woods. Although it has not been collected outside the limits of the township of Wareham there is little doubt that it is established elsewhere in the surrounding country, especially in the wooded region adjacent to the headwaters of Buzzards Bay, and it would not be surprising, in view of its occurrence so far out of its previously recorded range, to have it found in other northern localities, particularly along the coastal belt.

It was first collected by the writer in 1918 but it was not until some two years later, when specimens were communicated to Mr. G. K. Merrill, that its identity was established. Since then material has been sent to various American and European herbaria.

The collector not familiar with the species who might happen to meet with it should have no great difficulty in distinguishing it from any other Cladonia growing in this region. It appears to be singularly free from the polymorphism so often shown in Cladonia species. The fact that it does not develop cups (either open or closed) and also that the podetia are not club-shaped narrows the chances of confusion. It is perhaps somewhat similar in habit and construction

[1] A Synopsis of the North American Lichens. Part 1, p. 245.

to such species as *Cladonia uncialis, Cladonia sylvatica,* etc., but its tendency to retain or produce squamae will readily separate it from any of that group. It somewhat resembles *Cladonia turgida* in color and might also perhaps be referred carelessly to a form or phase of *Cladonia furcata.* Its more slender podetia and smaller squamules, to go no further, will separate it from the first, and its lighter color together with its more erect podetia and shorter, more truncate branches, from the last. In the event of doubt its behavior under the action of caustic potash is diagnostic, the chemical response (yellow) being immediate and pronounced. A sheet of representative Wareham material showing the primary thallus and fully developed plants in both sterile and fertile states has been deposited in the Cryptogamic Herbarium, Cambridge.—C. A. ROBBINS, Onset, Massachusetts.

Oenothera perennis L. var. **rectipilis** (Blake) comb. nov.

Oenothera pumila var. *rectipilis* Blake, RHODORA **19**: 110. 1917.

In his recent revision of *Kneiffia,* Pennell[1] has replaced the familiar name *Oenothera pumila* L. by the older *O. perennis* L., an equation already made in the Index Kewensis but overlooked in the preparation of all recent treatments of the northeastern flora. Dr. Pennell refers the variety above mentioned to the synonymy of *Kneiffia perennis* (L.) Pennell, and states that "the unusual state in which the pubescence is spreading may be considered a form." On the contrary, it seems to me to be altogether too striking and distinct a plant to be passed over without recognition in nomenclature. It apparently has, moreover, a definite if restricted range, being known only from the southern shore of the Baie des Chaleurs in New Brunswick and the vicinity of the Niagara River in Ontario and (?) New York.—S. F. BLAKE, Bureau of Plant Industry, Washington, D. C.

ANOTHER ORCHID NEW TO NEW ENGLAND.—The publication by Mr. H. W. Child[2] of the discovery in Vermont by Cyrus Pringle Horsford of *Listera australis* indicates that there are still species of this much collected group to be sought in New England. It was therefore, particularly interesting, while recently inserting into the

[1] Child, RHODORA, xxiv. 187 (1922).
[2] Bull. Torrey Club **46**: 372. 1919.

organized collection of the New England Botanical Club the herbarium of the veteran New Bedford botanist, E. Williams Hervey, Esq., to find three beautiful sheets, collected by Mr. Hervey and correctly identified by him, of *Habenaria cristata* (Michx.) R. Br. This Fringed Orchid, with orange-yellow flowers, is a characteristic coastal plain species which is frequent in the Pine Barrens of New Jersey but north of there rare and local, and apparently unrecorded northeast of New Jersey. Mr. Hervey's collections come from Smith's Neck in South Dartmouth, Massachusetts, August 5, 1905 and August 1, 1908, and make a notable addition to the coastal plain flora which reaches Buzzard's Bay and adjacent sections of Bristol and Plymouth Counties but which has failed to extend east of Buzzard's Bay along Cape Cod: such plants as *Potamogeton pulcher* (Nashawena, *Faxon*), *Eleocharis tuberculosa* (Marion, Rochester, Plymouth, etc.), *Rynchospora inundata* (Plymouth), *Carex striata*, var. *brevis* (Wareham, *Kennedy;* Plymouth, *Fernald;* Plympton, *Sanford*); *Habenaria ciliaris* (Marion, *Hitchings*); *Desmodium sessilifolium* (Lakeville and Middleboro); *Myriophyllum scabratum* (Westport and Falmouth); *Hydrocotyle verticillata* (Falmouth, *Morong*); *Sabatia stellaris* (Dartmouth, *Hervey*); *Scutellaria integrifolia* (New Bedford, *Hervey:* Bridgewater, old specimen in Gray Herbarium) and *Eupatorium leucolepis* (Lakeville and Kingston). The presence of these and many other southern plants in the Buzzard's Bay and adjacent regions but not east of the western base of Cape Cod (though sometimes on Martha's Vineyard or Nantucket) suggests that intensive work in the region from western Plymouth to Little Compton will yield as notable discoveries as have recent explorations on Nantucket and Cape Cod.—M. L. Fernald, Gray Herbarium.

The date of the February issue (unpublished as this goes to press) will be announced later.

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Rhodora

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Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 25. April, 1923. No. 292.

NOMENCLATORIAL TRANSFERS IN MARISCUS.

M. L. Fernald.

The chiefly austral genus which has long passed as *Cladium* must, as pointed out by Schinz & Thellung[1] in 1908 and, upon different grounds, by Otto Kuntze in 1891,[2] take the generic name *Mariscus* Zinn. Briefly, the case is as follows.

Mariscus was a pre-Linnean genus of Haller,[3] embracing the characteristic European plant with serrate leaves, which had been called by Scheuchzer *Pseudocyperus palustris, foliis & carina serratis.*[4] In the *Species Plantarum* Linnaeus treated it as a species of *Schoenus*, taking up Haller's name and calling the plant *Schoenus Mariscus.*[5] In post-Linnean time *Mariscus* was apparently first taken up by Zinn,[6] who in 1757 properly defined the genus which consisted of Haller's *Mariscus*, the *Schoenus culmo tereti, foliis margine dorsoque aculeatis* of Linnaeus and *Cyperus longus inodorus Germanicus* of Bauhin; in other words *Mariscus* of Zinn was the same as *Schoenus Mariscus* L., which had been based upon the identical references; and Zinn was followed in using *Mariscus* by Boehmer[7] in 1760. In 1756 Patrick Browne described under a new generic name, *Cladium*,[8] the characteristic West Indian plant, but the genus *Cladium* itself was not defined, merely the one species under it; Browne's practice being to use a generic name and under it to describe the different

[1] Schinz & Thellung, Vierteljahrs. Naturforsch. Gesells. Zurich, liii. 523 (1908).
[2] Kuntze, Rev. Gen. Pl. i. 754 (1891).
[3] Haller, Enum. Stirp. Helvet. 251 (1742).
[4] Scheuchzer, Gram. 375 (1719).
[5] L. Sp. Pl. i. 42 (1753).
[6] Zinn, Cat. Pl. Hort. Gott. 79 (1757).
[7] Boehmer in Ludwig, Defin. Gen. Pl. 423 (1760).
[8] P. Br. Hist. Jam. 114 (1756).

species. The name *Cladium*, then, as published by Browne was, unfortunately, a *nomen nudum*, which seems not to have been properly accompanied by a generic characterization until 1766 when Crantz[1] validated it by giving a generic description and citing a single species, *C. jamaicense* (published *iamaicense*). It was next properly taken up in 1806, when it was defined by Schrader[2] who included two species, *C. germanicum* (*Schoenus Mariscus* L.) of Europe and *C. occidentale* (*Schoenus Cladium* Sw.) of the West Indies. Subsequently the name *Cladium* has come into universal use and the name *Mariscus* Gaertn. (1788) has been generally maintained for a group closely allied to and only unsatisfactorily separated from *Cyperus*. It should be clear, however, that *Cladium*, which was not properly defined as a genus until 1766, must be replaced by the properly described *Mariscus* [Haller] Zinn (1757).

It is somewhat surprising that practically all modern European students have failed to recognize the specific differences which separate their common plant, *Mariscus serratus* Gilib.[3] (*Schoenus Mariscus* L., *Cladium Mariscus* Pohl) from the tropical American *M. jamaicensis* (Crantz) Britton (*Cladium jamaicense* Crantz., *Schoenus Cladium* Sw.) and the Hawaiian *M. leptostachyus* (Nees) Kuntze. Thus, in such works as Richter's *Plantae Europae*, i. 144 (1890) *Schoenus Cladium* Sw. of Jamaica and its synonyms, *S. effusus* Sw. and *Cladium occidentale* R. & S., as well as the Hawaiian *C. leptostachyum* Nees, are included without question as synonyms of the continental and northern European *C. Mariscus* (L.) R. Br.; and in their discriminating notes on the nomenclature of European plants Schinz & Thellung (*l. c.*) take up for the European species the name *M. Cladium* (Sw.) Kuntze based upon the Jamaican *Schoenus Cladium* and carrying the synonyms *S. jamaicensis* Crantz and *Mariscus jamaicensis* (Crantz) E. Janchen; and the late C. B. Clarke,[4]

[1] Crantz, Inst. i. 362 (1766).

[2] Schrad. Fl. Germ. i. 74 (1806).

[3] Gilib. Exercitia Phyt. ii. 512 (1792). This work is so rare that apparently there is no copy in America. Gilibert's account, for which I am indebted to the kindness of Dr. Arthur W. Hill, Director of the Royal Botanical Garden, Kew, was as follows:

"19. Mariscus serratus.

Radix repens. Culmi quatuorpedales. Folia margine dorsoque aculeata. Flores paniculato-ramosi; calycis glumae paleaceae, fasciculatim congestae; corolla nulla: semen unum, subrotundum, inter glumas.

Schoenus mariscus L. non rara in paludosis locis, circa Grodnam Jeziory, & alibi; florens julio: perennis. Lugdunea. Protectis tegendis loco straminis inservire potest: sero crescit; paludes replet; insulas natantes constituit."

[4] Clarke in Urban, Symb. Antill. ii. 134 (1900).

taking up Crantz's *Cladium jamaicense* for the West Indian plant, cited without question in the synonymy *C. germanicum* Schrad., *C. Mariscus* R. Br. and *Schoenus Mariscus* L. It would indeed be surprising if a plant which abounds over continental Europe and northward as a dominant species to the British Isles and Scandinavia were specifically identical with a dominant plant of the West Indies, tropical South America and the Gulf States of North America; and, as would be expected, study of large series of the two brings out abundant specific differences. The European *M. serratus* is a much lower plant, with less diffuse inflorescence, and its glomerules consist of more numerous and longer spikelets. In the tall (up to 3–4 m.) *M. jamaicensis* the scarious bases of the involucres and involucels are ciliolate, in *M. serratus* entire; and in *M. jamaicensis* the ovoid to subglobose abruptly beaked pale brown to olivaceous achenes are opaque or only slightly lustrous and obviously rugulose or pebbled, in *M. serratus* lance-ovoid, gradually attenuate, castaneous, highly lustrous and smooth.

The bibliography of the two is as follows:

MARISCUS SERRATUS Gilib. Exercitia Phyt. ii. 512 (1792). *Schoenus Mariscus* L. Sp. Pl. i. 42 (1753). *Cladium germanicum* Schrad. Fl. Germ. i. 75, t. v. fig. 7 (1806). *C. Mariscus* (L.) Pohl, Tent. Fl. Bohemiae, i. 32 (1810); R. Br. Prodr. 236 (1810). *M. Cladium* Kuntze, Rev. Gen. Pl. i. 754 (1891) and Schinz & Thellung, Vierteljahrs. Naturforsch. Gesells. Zurich, liii. 523 (1908), as to European plant, not *Schoenus Cladium* Sw.

M. JAMAICENSIS (Crantz) Britton in Small, Fl. Miami, 31 (1913) as *M. jamaicense*; E. Janchen in Schinz & Thellung, Vierteljahrs. Naturforsch. Gesells. Zurich, liii. 524 (1908) as synonym only. *Cladium jamaicense* Crantz, Inst. i. 362 (1766) published as *C. iamaicense*. *Schoenus Cladium* Sw. Prodr. 19 (1788), Fl. Ind. Occ. i. 97 (1797). *S. effusus* Sw. Prodr. 19 (1788). *S. Mariscus*, β *effusus* (Sw.) Pers. Syn. i. 58 (1805). *C. occidentale* Schrad. Fl. Germ. i. 76 (1806). *C. palustre* Poir. ex Schultes, Mant. i. 229 (1822). *C. effusum* (Sw.) Torr. Ann. Lyc. N. Y. iii. 374 (1836). *M. Cladium* (Sw.) Kuntze, Rev. Gen. Pl. i. 754 (1891) at least as to name-bringing synonym.

In organizing the species in the Gray Herbarium it has been necessary to make the following combinations.

M. **aromaticus** (Merrill), n. comb. *Cladium aromaticum* Merrill, Philipp. Journ. Sci., Bot. ix. 59 (1914).

M. **boninsimae** (Nakai), n. comb. *Cladium boninsimae* Nakai, Bot. Mag. Tokyo, xxv. 223 (1911).

M. **borneense** (C. B. Clarke), n. comb. *Cladium borneense* C. B. Clarke in Stapf, Trans. Linn. Soc., Bot. Ser. 2, iv. 245 (1894).

M. **californicus** (Watson), n. comb. *Cladium Mariscus*, var. *Californicum* Watson, Bot. Cal. ii. 224 (1880).

A beautifully distinct species extending from southern Nevada and southern California to the State of San Luis Potosi in Mexico. *M. serratus* (*Cladium Mariscus*) has widely creeping rootstocks and stolons; *M. californicus* is cespitose, forming hummocks described by Brewer as "1½ to 2 feet thick" (Brewer, acc. to Watson *l. c.*), while Jepson describes the plant as having "Stems numerous, stout, 6 to 10 feet high, forming very dense and heavy hummocks" (Jepson, Fl. Cal. 206). In *M. serratus* the erect inflorescence has glomerules of many spikelets; in *M. californicus* the diffuse drooping panicle has fewer (mostly 2–5) spikelets in a glomerule. In the European species the lustrous lance-ovoid achenes taper from near the middle very gradually to the apex; in *M. californicus* they are lustrous but of a broad cylindric-ovoid outline, with a very short tip. Besides the stations, San Gabriel, California and "Southern Nevada" originally given by Watson, Jepson cites others, at the bases of the San Gabriel and San Bernardino Mountains. Additional stations are as follows. New Mexico: along Pecos River, near Roswell, *D. Griffiths*, no. 5765, distributed as *Cladium effusum.* Mexico: border of water, Las Tablas, San Luis Potosi, *Pringle*, no. 5036; common in deep rich soil along the border of Media Luna, near Rio Verde, San Luis Potosi, *Palmer*, no. 62 (June, 1904).

M. **capillaceus** (Hook. f.), n.comb. *Chaetospora capillacea* Hook. f. Fl. Tasm. ii. 81. t. CXLI. A (1860). *C. capillaris* F. Muell. Fragm. Phyt. Austral. ix. 34 (1875). *Elynanthus capillaceus* (Hook. f.) Benth. Fl. Austral. vii. 377 (1878). *Schoenus capillaris* F. Muell. Second Cens. Austr. Pl. 215 (1889). *Schoenus tenuis* T. Kirk, Trans. N. Z. Inst. ii. 94 (1871). *Cladium capillaceum* (Hook. f.) C. B. Clarke in Cheeseman, Mem. N. Z. Fl. 789 (1906).

M. **chinensis** (Nees), n. comb. *Cladium chinense* Nees, Linnaea, ix. 301 (1835) and Nov. Act. Nat. Cur. xix. Suppl. i. 116 (1843). *C. japonicum* Steud. Syn. Pl. Cyp. 152 (1855).

Although referred by most recent authors to the European species, *M. chinensis* has very much smaller spikelets, as originally pointed out by Nees, and its pale achenes, only about one-third as large as in *M. serratus* are ellipsoid-ovoid and very short-tipped, rather than lance-ovoid and acuminate. Material of the Japanese plant with mature fruit is apparently inseparable from *M. chinensis.*

M. **colpodes** (Lauterb.), n. comb. *Cladium colpodes* Lauterb. in K. Schum. & Lauterb. Nachtr. Fl. Deutsch. Südsee, 59 (1905).

M. **complanatus** (Berggr.), n. comb. *Cladium complanatum* Berggr. Minneskr. Fisiog. Sällsk. Lund (1877), no. 8: 23, t. 6, figs. 1–5 (1878).

M. **delicatulus**, n. nom. *Cladium filiforme* Merrill, Philipp. Journ. Sci., Bot. v. 172 (1910), not *Mariscus filiformis* HBK. Nov. Gen. et. Sp. i. 213 (1816).

M. **Deplanchei** (Boeckl.), n. comb. *Baumea Deplanchei* Boeckl. Flora, lxi. 143 (1878). *Cladium Deplanchei* (Boeckl.) C. B. Clarke in Engler, Bot. Jahrb, xxxix. 26 (1906).

M. **distichus** (C. B. Clarke), n. comb. *Cladium distichum* C. B. Clarke, Philipp, Journ. Sci. ii. 102 (1907).

M. **ensiger** (Hance), n. comb. *Cladium ensigerum* Hance, Journ. Bot. xxiii. 80 (1885).

M. **falcatus** (Nees), n. comb. *Baumea falcata* Nees in Hook. Kew Journ. vi. 29 (1854). *Cladium falcatum* (Nees) C. B. Clarke, Kew Bull. Add. Ser. viii. 46 (1908).

M. **fallax**, n. nom. *Cladium cyperoides* Merrill, Philipp. Journ. Sci., Bot. vii. 74 (1912), not *Mariscus cyperoides* A. Dietr. Sp. Pl. ii. 348 (1833).

M. **ficticius** (Hemsl.), n. comb. *Cladium ficticium* Hemsl. Bot. Challenger Voy. iii. 59, t. 60, figs. 5–7 (1884).

M. **Gaudichaudii** (W. F. Wight), n. comb. *Baumia mariscoides* Gaudich. Bot. Freyc. Voy. 417 (1829). *Cladium mariscoides* (Gaudich.) Villar in Blanco, Fl. Philipp. ed. 3, iv. Nov. App. 309 (1880), not Torr. Ann. Lyc. N. Y. iii. 372 (1836). *C. gaudichaudii* W. F. Wight, Contrib. U. S. Nat. Herb. ix. 230 (1905).

M. **geniculatus,** n. nom. *Cladium philippinense* Merrill, Philipp. Journ. Sci., Bot. v. 171 (1910), not *Mariscus philippensis* Steud. Syn. Pl. Cyp. 66 (1855).

Although not strictly identical the specific names *philippensis* and *philippinense* are so similar that only confusion could result from transferring the latter to *Mariscus.*

M. **globiceps** (C. B. Clarke), n. comb. *Cladium globiceps* C. B. Clarke, Kew Bull. Add. Ser. viii. 46 (1908).

M. **hirtus** (Boeckl.), n. comb. *Machaerina hirta* Boeckl. Flora, lviii. 117 (1875). *Cladium hirtum* (Boeckl.) C. B. Clarke, Kew Bull. Add. Ser. viii. 46 (1908).

M. **Huttoni**(T. Kirk), n. comb. *Cladium Huttoni* T. Kirk, Trans. N. Z. Inst. ix. 551 (1877).

M. **Maingayi** (C. B. Clarke), n. comb. *Cladium Maingayi* C. B. Clarke in Hook. f. Fl. Brit. Ind. vi. 674 (1894).

M. **mariscoides**(Muhl.) Kuntze, forma **congestus** (Fernald), n. comb. *Cladium mariscoides,* forma *congestum* Fernald, Rhodora, xxiii. 234 (1922).

M. **Martii** (Defour), n. comb. *Isolepis Martii* (Defour) Roem. & Schultes, Syst. ii. 117 (1817). *Scirpus Martii* Defour ex Roem. & Schultes, l. c. (1817) in synonymy. *Cladium giganteum* Willkomm in Willkomm & Lange, Prodr. Fl. Hisp. i. 136 (1861). *C. Martii* (Defour) Richter, Pl. Eu. i. 144 (1890).

M. **Melleri** (Baker), n. comb. *Cladium Melleri* Baker, Journ. Linn. Soc. xxi. 451 (1885).

M. **micranthes** (C. B. Clarke), n. comb. *Cladium micranthes* C. B. Clarke, Kew Bull. Add. Ser. viii. 46 (1908).

M. **Milnei** (C. B. Clarke), n. comb. *Cladium Milnei* C. B. Clarke, Kew. Bull. Add. Ser. viii. 46 (1908).

M. **Muelleri** (C. B. Clarke), n. comb. *Cladium Muelleri* C. B. Clarke, Kew Bull. Add. Ser. viii. 47 (1908).

M. **platyphyllus**, n. nom. *Cladium latifolium* Merrill, Philipp. Journ. Sci., Bot. ii. 262 (1907), not *Mariscus latifolius* Schrad. ex Nees in Mart. Fl. Bras. ii. pt. 1: 50 (1842).

M. **pantopodus** (Baker), n. comb. *Cladium pantopodum* Baker, Journ. Linn. Soc. xxi. 451 (1885).

M. **pulcher** (Ridley), n. comb. *Cladium pulchrum* Ridley, Journ. Fed. Mal. States Mus. vi. 192 (1915).

M. RESTIOIDES (Sw.) Kuntze, var. **effusus** (Griseb.), n. comb. *Machaerina restioides*, var. *effusa* Griseb. Mem. Am. Acad. Sci., N. S. viii. 535 (1860). *Cladium restioides*, var. *effusa* (Griseb.) C. B. Clarke in Urban, Symb. Antill. ii. 136 (1900).

M. RIPARIUS (Nees) Kuntze, var. **crassus** (Thwaites), n. comb. *Baumea crassa* Thwaites, Enum. Pl. Zeyl. 353 (1864). *Cladium riparium*, var. *crassa* (Thwaites) C. B. Clarke in Hook. f. Fl. Brit. Ind. vi. 675 (1894).

M. **samoensis** (C. B. Clarke), n. comb. *Cladium samoense* C. B. Clarke in Stapf, Trans. Linn. Soc., Bot. Ser. 2, iv. 245 (1894).

M. **Vauthiera** (C. B. Clarke), n. comb. *Vauthiera australis* R. Rich. Ess. Fl. N. Zel. 107, t. 20 (1832), not *M. australis* (Nees) Kuntze. *Cladium Vauthiera* C. B. Clarke in Cheeseman, Man. N. Z. Fl. 788 (1906).

M. **xiphioides**, n. nom. *Cladium Drummondii* C. B. Clarke, Kew Bull. Add. Ser. viii. 91 (1908), not *Mariscus Drummondii* Steud. Syn. Pl. Cyp. 316 (1855).

GRAY HERBARIUM.

NOTES ON THE NORTH AMERICAN SPECIES OF LIMONIUM.

S. F. Blake.

Several years ago I published[1] in Rhodora a revision of the sea lavenders (*Limonium*) of North America and Mexico. Two principal groups were recognized, one, characterized by a glabrous calyx, containing three species, two of the eastern coast and one of the western; the other, marked by a pubescent calyx, containing six species, of which five were eastern and one western. At the time this revision was published only one specimen from the region between New Jersey and North Carolina had been available for examination. This was a plant collected by Clayton in Virginia, which was not clearly referable to any of the nine species described. Recent examination of the material of the genus in the United States National Herbarium, including a number of specimens from the area just mentioned, has brought out several extensions of range and led to the reduction to varietal rank of two species recognized in my previous paper.

Limonium angustatum, hitherto known only from Florida and Texas, proves to occur in Delaware, New Jersey, and even in New York, as well as in Louisiana and Alabama. The specimen of *Berlandier* 3179 (in part) from Tamaulipas in the Gray Herbarium, referred to *L. carolinianum* in my original paper, has been sent for reexamination by Dr. B. L. Robinson. I now consider it referable rather to *L. angustatum.* In the light of the new material examined, *L. angustatum* seems to be no more than varietally separable from *L. carolinianum.*

Limonium nashii, listed only from South Carolina to Texas and Tamaulipas, is now represented by two collections from New Jersey and one from Long Island. *L. trichogonum,* listed from Newfoundland and Labrador to New Jersey, extends southward to Maryland and Virginia. Intermediate specimens from New Jersey, Maryland, and North Carolina, as well as a Louisiana specimen closely similar to *L. trichogonum,* show that this plant is better treated as a geographic variety of *L. nashii,* of definite character in New England and northward but intergrading with *L. nashii* where their ranges adjoin.

[1] Rhodora **18**: 53–66. *pl. 118–119.* 1916.

Limonium californicum, recorded only on the California coast from Humboldt County to Los Angeles County, occurs also near San Diego, where its range meets that of *L. mexicanum*, although no sign of intergradation has been seen. Specimens referable to this species have also been examined from Nevada. The following more detailed notes on some of the species are presented.

Limonium carolinianum (Walt.) Britton, as to syn. only; Blake, Rhodora **18**: 57. *pl. 118, f. A.* 1916.

Recorded in my paper from North Carolina to Florida, and from Tamaulipas. The Tamaulipas specimen (*Berlandier* 3179 in part), on reexamination, proves to be referable rather to var. *angustatum*. Additional specimens have been examined in the National Herbarium, as follows:

North Carolina: Ocracoke Island, Hyde County, 1898, *Kearney* 2280. South Carolina: Santee Club, 1909, *McAtee* 1295. Florida: Near Jacksonville, 1893, *Curtiss* 4361; 1894, *Curtiss* II. 5275; 1895, *Curtiss* II. 5581. Fort Myers, Lee County, 1916, *Standley* 12612. St. Vincent Island, 1910, *McAtee* 1848B.

The leaves of the three Curtiss specimens cited are narrow, only 1 to 1.6 cm. wide, resembling the leaves of the original material of *Statice brasiliensis* var. *angustata* Gray, but their calyces are typical of *L. carolinianum.*

Limonium carolinianum var. **angustatum** (Gray) Blake.

Statice brasiliensis var. *angustata* Gray, Syn. Fl. N. Amer. **2**[1]: 54. 1878.

Limonium angustatum Small, Bull. Torrey Club **24**: 488. 1897; Blake, Rhodora **18**: 58. *pl. 118, f. B.* 1916.

Limonium carolinianum Mohr, Contr. U. S. Nat. Herb. **6**: 663. 1901. Not *Statice caroliniana* Walt.

Statice angustata Wangerin, Zeitschr. Naturw. Halle **82**: 439. 1911.

The supposed difference in character of bractlets between *L. angustatum* and *L. carolinianum* breaks down completely in the series examined, leaving nothing to separate the two plants but the difference in the calyx lobes. As specimens occur intermediate in calyx characters, it seems necessary to subordinate *L. angustatum* to *L. carolinianum* as a variety. The extension of range for this plant to

New York, New Jersey, and Delaware is noteworthy. Of the following cited specimens, all except three are in the National Herbarium.

New York: New Dorp, Staten Island, 5 Sept. 1895, *Pollard.* New Jersey: Weehawken, 14 Sept. 1895, *Van Sickle.* Port Norris, 1890, *J. H. Holmes.* Cape May, 28 Aug. 1917, *A. Gershoy* 561 (Gray Herb.). Delaware: Cedar Creek, 10 Sept. 1875, *Commons* (Gray Herb.). Florida: Manatee, *Simpson.* Without definite locality, *Chapman Herbarium* (intermediate between *carolinianum* and *angustatum*). St. Vincent Island, 1910, *McAtee* 1833 (intermediate). Alabama: Mobile County, 1870, *Mohr.* Louisiana: Vicinity of Cameron, 1910, *McAtee* 1921. Texas: Galveston, 18 Sept. 1877, *Ward* (mixed with *L. nashii*). Galveston Island, 1901, *Tracy* 7474. Tamaulipas: Field near Santa Teresa, Oct. 1830, *Berlandier* 3179 in part (Gray Herb.; referred in my former paper to *L. carolinianum*).

Tracy 7474, as represented in the Gray Herbarium, was *L. nashii* Small, but the specimen in the National Herbarium is definitely *L. carolinianum* var. *angustatum.* Both plants were previously known from this locality.

Limonium mexicanum Blake, Rhodora **18**: 59. *pl. 118, f. C.* 1916

Additional specimens examined in the National Herbarium:

California: Bay of San Francisco, *Wilkes Expedition.* San Diego, 1875, *Palmer*, 154; same locality, 1889, *Vasey.* Chula Vista, near San Diego, 1915, *Collins & Kempton* 333.

The Wilkes Expedition specimens unquestionably belong to *L. mexicanum,* having a perfectly glabrous calyx, and represent a noteworthy extension of range.

Limonium nashii Small; Blake, Rhodora **18**: 61. *pl. 118, f. D.* 1916.

Statice tracyi Gand. Bull. Soc. Bot. France **66**: 221. 1919.

Gandoger's *Statice tracyi* is based primarily on *Tracy* 6475, from St. Vincent, Florida; a specimen from Texas (*Leybold*) is also cited. In my revision (p. 61) I called attention to *Tracy* 6475 as a very puzzling plant. In the light of the variation exhibited by the more abundant material now available, the differences there commented on are seen to be of little importance, and I have no hesitation in reducing *Statice tracyi* to synonymy. The following additional specimens referable to *L. nashii* are in the National Herbarium:

New York: Cedar Point, Long Island, 8 Sept. 1879, *J. Schrenk.* New Jersey: Pleasantville, 1 Oct. 1916, *Tidestrom* 8015. Cold

Spring, Cape May County, 4 Aug. 1909, *Pennell* 2180. Georgia: Tybee Island, Chatham County, 29 Sept. 1900, *Harper* 748. Florida: St. Augustine, Sept. 1848, *Rugel* 307. Texas: Galveston, Sept. 1839, ——; same locality, 18 Sept. 1877, *Ward*. Vicinity of Corpus Christi, Oct. 1913, *Rose* 18085. Without definite locality, *Mexican Boundary Survey under Emory* 708.

Limonium nashii var. **trichogonum** Blake.

Limonium trichogonum Blake, Rhodora **18**: 61. *pl. 119, f. E.* 1916.

At the time this plant was described as a new species, I had seen no material of the group of species with hairy calyx from the area between New Jersey (the southernmost locality for *L. trichogonum*) and South Carolina (the northernmost locality for *L. nashii*). The dozen or more specimens now available from New York to Virginia and the Carolinas show that the two plants, although distinct enough in their proper areas, intergrade in the intermediate region, and that *L. trichogonum* is better treated as a northern variety of *L. nashii*. The following specimens in the National Herbarium are *intermediate* between the two forms:

New Jersey: Weehawken, 30 Aug. 1894, *Van Sickle*. Maryland: Shore of Potomac River, Rock Point, Charles County, 2 Oct. 1921, *Blake* 8432. North Carolina: Without definite locality, 1888, *G. McCarthy* (nearer *trichogonum*). Louisiana: Isle à Pied, 13 Aug. 1900, *Tracy & Lloyd* 264 (nearer *trichogonum*).

All the New England material examined is typical of *L. nashii* var. *trichogonum*. The following additional specimens, referable to var. *trichogonum*, are at hand in the National Herbarium:

New Jersey: Atlantic City, 1867, *I. S. Moyer*. Maryland: St. Mary's City, 22 Aug. 1905, *C. D. Mell*. Virginia: Fortress Monroe, 1879, *Vasey*. Smith's Island, 1 Oct. 1897, *Wm. Palmer*.

The specimen collected by Clayton (no. 573) in Virginia, and now in the British Museum, which was referred to in my previous paper (p. 63) as having the calyx teeth of *L. trichogonum* but the glabrous tube of *L. carolinianum*, probably belongs to *L. carolinianum* var. *angustatum*.

Limonium californicum (Boiss.) Heller; Blake, Rhodora **18**: 64. *pl. 119, f. G.* 1916.

This species, previously known on the California coast from Humboldt County to Los Angeles County, extends southward to the

vicinity of San Diego; and Nevada specimens, although differing in slight details, must be referred here. Two or three of the calyx ribs are sometimes glabrous or nearly so in this species. The following additional material has been examined in the National Herbarium:

CALIFORNIA: Near San Francisco, 1863, *Bolander* 2428. Alviso, Santa Clara County, Sept. 1902, *Elmer* 4218. Ocean Beach, near San Diego, 17 Aug. 1894, *Mearns* 4036 (in Nat. Herb.; but the specimen of this number in Gray Herb. is *L. mexicanum*). Without definite locality, *C. Wright*. NEVADA: Ten miles from Stone's Ferry, altitude 425 meters, 11 April 1894, *Jones* 5032m. Muddy Creek, altitude 610–915 meters, 1898, *Purpus* 6157.

LIMONIUM LIMBATUM Small; Blake, RHODORA **18**: 64. *pl. 119, f. H.* 1916.

The following additional specimens of this very distinct species have been examined in the National Herbarium.

TEXAS: Near Pecos City, 14 Oct. 1913, *Rose & Fitch* 17912. Stockton, June 1881, *Havard*. NEW MEXICO: Roswell, June 1899, *J. D. Tinsley* 14. Tularosa, 4 Dec. 1902, *J. H. Gaut*. Nine miles south of Tularosa, *C. H. T. Townsend* 6. Malone's Ranch, 16 July 1895, *Wooton*. Morgan's Ranch, altitude 1125 meters, 16 July 1895, *Wooton*. Malone's Crossing, 22 Aug. 1899, *Wooton*.

The key given in my original paper (p. 57) may now be revised, as follows:

KEY TO NORTH AMERICAN SPECIES OF LIMONIUM.

Calyx glabrous (rarely with one or two hairs in nos. 1a and 2).
  Branchlets loosely flowered; Atlantic Coast species.
    Calyx lobes deltoid or oval, obtuse or rounded to acute, usually 0.5–0.7 mm. long; North Carolina to Florida.
      1. *L. carolinianum* (Walt.) Britton.
    Calyx lobes triangular-ovate, acute or subacuminate, 0.7–1 mm. long; New York to Texas and Tamaulipas.
      1a. *L. carolinianum angustatum* (Gray) Blake.
  Branchlets densely flowered; California and Lower California. . . . . .2. *L. mexicanum* Blake.
Calyx densely pubescent at least at base.
  Calyx limb erect.
    Calyx (5.3) 6–7.5 mm. long, its lobes 1–1.7 mm. long.
      Scape strongly branched from near the base; innermost bractlet 5–6 mm. long; Tamaulipas
        3. *L. endlichianum* (Wangerin) Blake.
      Scape branched from near the middle; innermost bractlet 3.8–5.5 mm. long.
        Calyx pubescent only at base or on one or two of the ribs to the middle; New York to Texas and Tamaulipas. . . . . .4. *L. nashii* Small.

Calyx densely pubescent to middle or above on all the ribs; Newfoundland and Labrador to Virginia....................4a. *L. nashii trichogonum* Blake.
Calyx 4.3–5.5 mm. long, its lobes 0.4–0.8 mm. long.
Calyx lobes obtuse to subacute; hairs of calyx ca. 0.5–0.6 mm. long; branchlets loosely flowered; Florida.
5. *L. obtusilobum* Blake.
Calyx lobes acute or acutish; hairs of calyx ca. 0.2–0.3 mm. long; branchlets densely flowered; California, Nevada....................6. *L. californicum* (Boiss.) Heller.
Calyx limb spreading at maturity; Texas, New Mexico.
7. *L. limbatum* Small.

Bureau of Plant Industry, Washington, D. C.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XL.

SOLANACEAE.

DATURA.

D. inermis Jacq. Malden, introduced (*F. S. Collins*, Aug. 10, 1881); rubbish heap, Cambridge (*W. Deane*, Sept. 23, Oct. 2, 1884). Adventive from Africa.

D. Metel L. In shingle at Phillips Beach, Swampscott (*C. W. Swan*, 1888). Specimen in herb. N. E. Botanical Club.

D. meteloides DC. Rubbish heap, Cambridge (*W. Deane*, Sept. 17–18, Oct. 14, 1885). Specimen in herb. W. Deane.

D. Stramonium L. Waste places; occasional, especially in Boston and along the coast.

D. Tatula L. Waste places, same range as *D. Stramonium*.

HYOSCYAMUS.

H. niger L. A rare weed at Ipswich, Westford, Somerville, Cambridge and Boston; other reports without specimens cited in J. Robinson, Fl. Essex Co. 86, 1880.

LYCIUM.

L. chinense Mill. Boston (*S. S. Clark*, Nov. 10, 1915). Specimen in herb. Gray. Native of China.

L. halimifolium Mill. Persistent and escaping in many places.

LYCOPERSICUM.

L. esculentum Mill. Old gardens and waste places, seldom appearing for more than one year and hardly a part of the flora.

NICANDRA.

N. PHYSALODES (L.) Pers. Waste places, occasional.

NICOTIANA.

N. BIGELOVII Wats. Woolwaste, N. Chelmsford (*W. P. Alcott*, July 1, 1879); also Lowell (*C. W. Swan*) according to Dame & Collins, Fl. Middlesex Co. 80, 1888.

N. LONGIFLORA Cav. Dump, Granite Ave., Dorchester (*N. T. Kidder*, Oct. 7, 1919). Specimen in herb. N. T. Kidder.

N. RUSTICA L. One plant near dump (*M. L. Fernald & B. Long*, Aug. 28, 1913). Specimen in herb. N. E. Botanical Club.

PETUNIA.

P. AXILLARIS (Lam.) BSP. Occasional in waste land and vacant lots. Originally a native of Argentina.

P. VIOLACEA Lindl. Vacant lots and waste land, rare.

PHYSALIS.

All the specimens reported in Dame & Collins, Fl. Middlesex Co., 1888, are here included, though most of the names have been superseded.

P. ANGULATA L. Dump, Cambridge (*M. L. Fernald*, Sept. 26, 1908). Specimen in herb. Gray.

P. heterophylla Nees. Dry fields, frequent.

P. heterophylla Nees., var **ambigua** (Gray) Rydb. Meadow and waste land, Sherborn (*Miss M. L. Loomis*, June 19, 1911 et seq.). Probably elsewhere.

P. IXOCARPA Brotero. Rubbish heap, Cambridge (*W. Deane*. Sept. 24–25, 1884). Specimen in herb. W. Deane.

P. LONGIFOLIA Nutt. Waste place, Woburn (*F. W. Grigg*, Sept. 6, 1919, Oct. 11, 1921).

P. PRUINOSA L. Waste places, doubtfully native; Lowell, Lynn, Revere, Cambridge, Boston, Braintree.

P. subglabrata Mackenzie & Bush. Moist soil, Charlestown (*C. E. Perkins*, Sept. 6, 1911); Medford (*C. H. Knowlton*, Oct. 3, 1903); Newton (*F. W. Grigg*, Aug. 13, 1895).

P. VIRGINIANA Mill. Woolen mills, Westford (*Mrs. J. P. Riese*, May 30, 1918). Specimen in herb. Gray.

SOLANUM.

S. carolinense L. Waste places, rare (12 stations).

S. citrullifolium A. Br. Old brickyard, Cambridge, many plants (*M. L. Fernald*, Sept. 26, 1908); dump (*M. L. Fernald & B. Long*, Aug. 28, 1913). Specimens in herb. Gray and N. E. Botanical Club.

S. Dulcamara L. Swamps, brooks and waste places, common throughout.

S. Dulcamara L., var. villosissimum Desv. See Rhodora xxiv, 202, 1922. Rare, at Groveland, Burlington and Cambridge. In Europe this variety grows in drier places than *S. Dulcamara.*

S. nigrum L. Rich soil, also in gravel on sea-beaches; frequent throughout.

S. nigrum L., var. Dillenii Gray. Dump, W. Cambridge (*M. L. Fernald*, Sept. 26, 1908; *M. L. Fernald & B. Long*, Aug. 28, 1913). Specimens in herb. Gray and N. E. Botanical Club. Native from Florida to S. America.

S. Pseudo-Capsicum L. Dump, Garden St., Cambridge (*F. W. Grigg & R. A. Ware*, Oct. 11, 1919); Fenway, Boston (*A. S. Pease*, Oct. 16, 1906). A tropical species, introduced by florists.

S. rostratum Dunal. Gardens and waste places, occasional.

S. sisymbriifolium Lam. Rubbish heap, Cambridge (*W. Deane*, Oct. 5, 7, 1884, Sept. 15, 1885; *M. L. Fernald & B. Long*, Aug. 28, 1913).

S. tuberosum L. Waste places, occasional, but hardly a part of the flora.

SCROPHULARIACEAE.

AGALINIS (Purple Gerardia).

See F. W. Pennell, article in Torreya xix. 205–216, 1919. The plants of this genus are at least in part parasitic on herbs.

A. acuta Pennell. (*Gerardia parvifolia* of Gray's Manual, 7th ed.). Dry sandy soil, Natick (*F. F. Forbes*, Sept. 17, 1905; Aug. 27, 1908). Specimen in herb. Gray.

A. maritima (Raf.) Raf. Salt marshes, common from Salisbury to Duxbury.

A. paupercula (Gray) Britton. Swamps and meadows, sometimes on brackish marshes, common throughout.

A. purpurea (L.) Pennell. Moist soil, Chelsea, Winthrop, Needham, Newton; probably more frequent in southern towns, but not reported.

A. tenuifolia (Vahl.) Raf. Sandy soil; apparently common, but no reports from southern towns.

ANTIRRHINUM.

A. MAJUS L. Dump on steep river bank, Newburyport (*D. White*, Sept. 13, 1913); waste place near salt marsh, Nahant (*F. W. Grigg*, Aug. 26, 1911). Native of the Mediterranean region.

AUREOLARIA. (Yellow Gerardia).

See F. W. Pennell, article in Torreya xix. 205–16. 1919.

These plants are at least partly parasitic on roots of oaks and other hardwood trees.

A. flava (L.) Farwell. (*Gerardia virginica* of Gray's Manual, of 7th ed.). Dry open woods; apparently well distributed.

A. pedicularia (L.) Raf. Dry sandy clearings and borders of woods, common.

A. virginica (L.) Pennell. (*Gerardia flava* of Gray's Manual, 7th ed.). Rich open woods; not reported from southeastern towns, but frequent elsewhere.

CASTILLEJA.

C. coccinea (L.) Spreng. Meadows and swamps, rare; from Boxford, Andover, Dracut and Dunstable south to Franklin, but not known on the coast nor in Plymouth Co. Yellow form even more rare.

CHELONE.

C. glabra L. Swamps and low ground around brooks; common throughout.

DIGITALIS.

D. LANATA Ehrh. Waste heap, Rowley (*Miss H. R. Towne*, July 20, 1918; *J. D. Sornborger*, 1918). Specimens in herb. Gray and Peabody Acad. Sci. Native in the Danube region and in Greece.

D. PURPUREA L. Escape in open woods near leaf-dump, W. Manchester (*F. T. Hubbard*, June 23, 1913). Specimen in herb. N. E. Botanical Club.

GRATIOLA.

G. aurea Muhl. Wet sandy shores of fresh water, common throughout. White form occasional.

G. neglecta Torr. (*G. virginiana* of Gray's Manual). See Rhodora xx. 65, 1918. Moist rich soil; occasional in Essex, Middlesex and Norfolk counties.

ILYSANTHES.

I. inaequalis (Walt.) Pennell. (*I. anagallidea* (Michx.) Raf.) See Pennell (Torreya, xxii. 83, 1922). Wet sandy and gravelly shores of ponds; frequent, but no reports from southern towns.

I. dubia (L.) Barnhart. Wet places, often on shores; frequent, but no reports from Plymouth Co. (in our area).

LIMOSELLA.

L. subulata Ives. (*L. aquatica* L., var. *tenuifolia* of Gray's Manual). See Rhodora xx. 160–164, 1918. Above Chain Bridge, Newburyport (*E. Moulton*, Aug. 22, 1886); salt-marsh mud flats of Ipswich River, Ipswich (*J. H. Sears*, July 23, 1886). Specimens in herb. Peabody Acad. Sci. and Gray.

LINARIA.

L. canadensis (L.) Dumont. Dry sandy soil, sometimes in moister places; common throughout.

L. Cymbalaria (L.) Mill. Dump, Lowell (*C. W. Swan*, Aug. 4, 1884); waste heap, Malden (*F. S. Collins*, June 26, 1886); Sherborn (*Miss M. L. Loomis* Dec. 3, 1912); Milton, weed about greenhouse (*N. T. Kidder*, June 28, 1921).

L. Elatine (L.) Mill. "In siccis apricis argillaceis ad Ipswich" (*Wm. Oakes*, no date); weed in garden among grass, Cambridge (ex. herb. H. G. Jesup, August, 1877).

L. genistaefolia (L.) Mill. Fields and roadsides, well naturalized at Groton (*C. H. Knowlton*, Sept. 1905 to date). Introduced from Europe.

L. repens Mill. About six plants escaped on Mill St., Waverley [Belmont] (*W. Deane*, June 24, 1900). Native of Europe.

L. supina Desf. Medford (*Wm. Boott*, July 10, 1863). Specimen in herb. Gray.

L. vulgaris Hill. Roadsides, fields and waste places; very common throughout.

L. minor (L.) Desf. Cambridge gravel pathway in Botanic Garden (*F. W. Hunnewell*, Sept. 12, 1914). Specimen in herb. F. W. Hunnewell.

MELAMPYRUM.

M. lineare Lam. Dry open woods, common.

MIMULUS.

M. BREVIPES Benth. Sown by wool refuse, N. Chelmsford (*W. P. Alcott*, June 21, 1879). Specimen in herb. Peabody Acad. Sci.

M. moschatus Dougl. Cold brook, Lexington (*F. S. Piper*, Aug. 11, 1912). Specimen in herb. Gray.

M. ringens L. Meadows, swamps and wet shores; common throughout.

ORTHOCARPUS.

O. PURPURASCENS Benth. Woolwaste, N. Chelmsford (*W. P. Alcott* June 24, 1879). Specimen in herb. Peabody Acad. Sci. An annual from the coastal region of California.

PEDICULARIS.

P. canadensis L. Fields, meadows and open woods; common throughout.

P. lanceolata Michx. "Revere, just over the line" (. . . . *Moody*, no date). Specimen in herb. N. E. Botanical Club.

PENTSTEMON.

P. hirsutus (L.) Willd. Dry soil, rare; ten scattered stations.

P. LAEVIGATUS Ait. A rare introduction found at Haverhill, Groveland, Marblehead and Needham.

P. LAEVIGATUS Ait., var. DIGITALIS (Sweet) Gray. Fields, introduced in grass seed, rare; Rowley, Haverhill, Groveland, Hamilton, Andover, Lexington.

RHINANTHUS.

R. Crista-galli L. Rockport (*J. H. Sears*, June 30, 1885; *F. F. Forbes*, July 3, 1904); Stony Brook Reservation, old house site, W. Roxbury (*N. T. Kidder*, June 24, 1920).

R. Crista-galli L., var. **fallax** (Wimm. & Grab.) Druce. See RHODORA xii. 143, 1910. Near seashore. Rockport (*F. F. Forbes*, July 5, 1903). Specimen in herb. Gray.

SCHWALBEA.

S. americana L. Center St. near water tower, S. Weymouth (*E. & C. E. Faxon*, Sept. 9. 1886, July 16, 1887). Specimens in herb. Gray.

SCROPHULARIA.

S. lanceolata Pursh. (*S. leporella* Bicknell). See Pennell (Torreya, xxii. 84, 1922). Moist soil, often in shade; occasional.

S. marilandica L. Rich open woods; rare,Sangus, Lynn, Lexington, Revere, Concord, Boston: Roxbury (*John A. Lowell*, 1846).

S. NODOSA L. Thicket, Cambridge (*M. L. Fernald*, Sept. 1, 1892, the colony spreading and now of considerable extent); about a dump, Cambridge (*M. L. Fernald & B. Long*, Aug. 28, 1913). Specimens in herbs. Gray and N. E. Botanical Club. Naturalized from Europe.

VERBASCUM.

V. BLATTARIA L. Pastures and waste places, rare (11 stations).

V. LYCHNITIS L. Westford (*W. E. Coburn*, 1887). Specimen in herb. N. E. Botanical Club.

V. PHLOMOIDES L. Introduced in woolwaste at Gloucester, Westford, Medford, Weston and Plainville.

V. NIGRUM L. Tapleyville, Danvers (*J. H. Sears*, Aug. 8, 1879). Adventive from Europe, probably in wool. Specimen in herb. Peabody Acad. Sci.

V. THAPSUS L. Pastures and dry soil; very common throughout.

VERONICA.

For nomenclatorial changes and descriptions of new species and varieties in this genus see articles by F. W. Pennell in RHODORA xxiii. 1–22, 29–41.

V. AGRESTIS L. College campus, Wellesley (*K. M. Wiegand*, March 22, 1913); Roxbury (*John A. Lowell*, May 7, 1846); specimens in herb. Wellesley College, and Bost. Soc. Nat. Hist. Reported also from Reading and Framingham in Dame & Collins, Fl. Middlesex Co. 69, 1888.

V. americana Schwein. Cold wet places, rare: Westford, Danvers, Peabody, Brookline.

V. ARVENSIS L. Dry soil, frequent.

V. CHAMAEDRYS L. Waste places and vacant lots, rare: Andover, Newburyport, Gloucester, Cambridge, S. Boston, Braintree, Wellesley.

V. glandifera Pennell. (*V. Anagallis-aquatica,* in part, of Gray's Manual.) Ipswich (*Wm. Oakes,* no date). Specimens in herbs. Gray and Boston Society of Natural History.

V. LATIFOLIA L. (*V. Teucrium* of Gray's Manual, 7th ed.) Roadside escape, Chelmsford (*C. H. Knowlton,* June 14, 1902); Sharon (*S. F. Poole,* June 1905).

V. LONGIFOLIA L. (*V. maritima* L.) Roadsides and waste land, rare (nine stations).

V. officinalis L. Dry open woods; rather common elsewhere, but apparently rare in Essex and Plymouth Counties.

V. PEREGRINA L. Weed in moist places; frequent except in southern towns.

V. PEREGRINA L., var. XALAPENSIS (H.B.K.) Pennell. In similar situations, about as frequent as the species.

V. PERSICA Poir. (*V. Tournefortii* C. C. Gmelin.) Newburyport (*E. Moulton,* 1886); Georgetown (*Mrs. C. N. S. Horner,* 1886); weed in Prof. D. L. Sharp's garden, Hingham (*C. H. Knowlton,* May 14, 1916).

V. scutellata L. Wet places, common.

V. serpyllifolia L. Fields, lawns and gardens; common throughout.

[*V. spicata* L. Reported from roadside, N. Chelmsford (*C. W. Swan*) in Dame & Collins, Fl. Middlesex Co. 69, 1888, but specimen is not available for examination.]

C. H. KNOWLTON } *Committee on*
WALTER DEANE } *Local Flora.*

SALIX SERISSIMA ON LONG'S PEAK.—Mr. Carleton R. Ball, Botanical Gazette, lxxii. 221 (1921), in speaking of the distribution of *Salix serissima* (Bailey) Fernald says that recent collections have extended its known range "southwestward to Pembina and Rolette Counties in North Dakota and to Flathead County, Montana" and that "It is quite possible that further search will extend the range both north and south in the Rocky Mountains."

In 1913, while collecting on Long's Peak, Colorado, I found a willow which I took to be this species, growing in an alpine meadow at an altitude of about 9,000 feet. Professor Fernald, to whom I have recently shown my specimen, has confirmed my identification.

This new station carries out Mr. Ball's prediction and extends the range of the species in the Rocky Mountains about 500 miles southward of the previously recorded stations in Montana.—Francis Welles Hunnewell, Wellesley, Massachusetts.

Lepachys columnaris in eastern Massachusetts.—Last July, a plant was found near the railroad station at South Billerica and was brought to me for name. It was a very poor specimen, but appeared to be *Lepachys columnaris*, Torr. & Gray. The Gray Herbarium has since confirmed my opinion and stated that no specimen of this species had been received from this region and that one would be welcome. This I was unable to get, as there was but one plant and the root had been transplanted to a garden. It was thought that the seed might have been brought in baled hay which was unloaded at the station.—Charles W. Jenks, Bedford, Massachusetts.

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THE IDENTITIES OF THE SAND CHERRIES OF EASTERN AMERICA.

M. L. Fernald.

The Sand Cherries of eastern America long passed as a highly variable species under the inclusive name *Prunus pumila* L. To be sure, other species, such as *P. susquehanae* Willd.,[1] *P. depressa* Pursh[2] and *P. cuneata* Raf.,[3] were proposed; but not until Bailey,[4] in 1892, took up *P. cuneata* did modern botanists recognize that at least two species were passing as *P. pumila*. Subsequently *P. pumila* and *P. cuneata* have been maintained as species, but neither in Bailey's several treatments nor in Wight's *Native American Species of Prunus*[5] have more than these two been recognized as occurring in eastern America.

Living as a boy on the banks of the Penobscot and subsequently botanizing extensively from New England to Labrador, the writer has always been familiar with the Sand Cherry, "Beach Plum" or *Cerise de Sable* which forms such extensive carpets, with its absolutely prostrate and repent rope-like branches trailing in the sands or gravels or over the ledges of the river-banks of New Hampshire, Maine, New Brunswick and Quebec, where its juicy black "plums" are highly prized either raw, cooked or as the source of a rich syrup-like jelly. This is the shrub described by Michaux[6] as *Cerasus pumila*: "Fruticulus prostratus. Fructus parvus, niger, edulis,"

[1] Willd. Enum. Pl. Hort. Berol. 519 (1809).
[2] Pursh, Fl. Am. Sept. i. 332 (1814).
[3] Raf. Ann. Nat. 11 (1820).
[4] Bailey, Cult. Native Plums and Cherries, 63 (1892).
[5] Wight, Native American Species of Prunus,—U. S. Dept. Agric. Bull. No. 179 (1915).
[6] Michx. Fl. Bor.-Am. i. 286 (1803).

Michaux's material, as shown in his herbarium and by his journal, coming from Lake St. John and Mistassini River in northern Quebec. This prostrate northern shrub, which abounds from eastern Gaspé Co. to Mistassini River, Quebec, southward across New Brunswick, Maine and New Hampshire, extending westward at least to the Ottawa, the Hudson and the Delaware systems, was described by Pursh as *Prunus depressa*, with the illuminating comment: "This low shrub, which spreads its branches very much and does not rise above one foot from the ground, is known by the name of *Sand-cherries*. The fruit is black, small, and agreeably tasted."

Familiar with Pursh's *Prunus depressa*, which in 1892 Bailey treated[1] as typical *P. pumila* but which he subsequently seems to have ignored, the writer was, therefore, puzzled to make his own experience fit Bailey's later descriptions of *P. pumila*: "Decumbent at the base when old, but the young growth strictly erect and often reaching 5–8 ft. in height, . . . fruit . . . small and usually scarcely edible"[2] or Wight's equally definite: "shrub 1½ to 5 feet high, . . . erect when young." When, however, on visiting the sand dunes of Lake Ontario in Oswego County, New York, with Professors Wiegand and Eames, he made the acquaintance of the upright shrub of the Great Lakes, it at once became apparent that the Great Lake *P. pumila* was quite distinct from *P. depressa*. Differing in its prostrate habit, more palatable fruit and more northeastern range, *P. depressa* is also distinguished by its leaves being less acuminate and often obtusely spatulate, thinner, less prominently veiny but more glaucous beneath, and usually with more crenate teeth, by its commonly shorter and less fimbriate stipules and by its more elongate, ellipsoid rather than subglobose or ovoid, stones.

In determining to which of these shrubs we should apply the name *Prunus pumila*, Bailey, as already noted, stated that "Linnaeus' characterization" shows "that Linnaeus meant to describe the prostrate plant." But this is not indicated by the definite statement of Linnaeus that *P. pumila* has "the stature of *Amygdalus nana*,"[3] a species "2–5 feet high."[4] Linnaeus took the name *pumila* from

[1] "Miller's figure, so far as it goes, and Linnaeus' characterization, show that Linnaeus meant to describe the prostrate and long-leaved plant"—Bailey, Cult. Native Plums and Cherries, 62 (1892).

[2] Bailey, Cycl. Am. Hort. 1450 (1901).

[3] L. Mant. 75 (1767).

[4] Boissier, Fl. Orient. ii. 644 (1872).

Cerasus canadensis pumila of Duhamel.[1] Duhamel's description gives little information but the fuller account by Miller (also cited by Linnaeus) states that the shrub is at least "Three or four feet high."[2] It is thus clear that *P. pumila* is the upright narrow-leaved shrub so characteristic of the Great Lake region.

The western range of *Prunus depressa* is not yet determined. It reaches the Ottawa valley and in the Connecticut system extends south into Franklin County, Massachusetts. Torrey's *Cerasus pumila* with "Stem trailing, 2–3 feet long,"[3] from Lake Champlain and the Hudson may belong here but all the specimens seen from the Champlain Valley in Vermont are *P. cuneata.* Here apparently belongs the shrub of the sandy shore of Long Lake in the Adirondacks, described by Peck[4] as "the prostrate trailing" *P. pumila*; and the shrub of the flats of the Delaware River is clearly *P. depressa,* as Porter's description of the two Pennsylvanian species indicates: "One [*P. pumila*][5] [i. e. *P. depressa*] grows on the islands and flats of the Delaware, which are composed of gravel and cobblestone drift washed bare by the floods, and are treeless. Here it grows, sending out on all sides strong prostrate branches, often as thick as a man's arm, which form flat patches six feet or more in diameter. The branches are so close together that they hold the fine sand and mud and create low mounds or hillocks, and in the proper season the spaces between them are black with the fruit. The other [*P. cuneata*][6] occurs in southeastern Pennsylvania on the borders of swamps and remote from river bottoms. It is strictly erect and attains the height of four feet."[7]

In studying the descriptions of the various Sand Cherries it has become apparent that *Prunus susquehanae* Willd. (1809) is the earliest and entirely valid name for the erect shrub with oblong to oblong-obovate leaves which was described in 1820 by Rafinesque as *P. cuneata.* Under the latter name this species is thus well described by Bailey: "The leaves are *short* and usually *blunt,* obovate, spatulate or when full grown sometimes elliptic-ovate, . . . the teeth few

[1] Duham. Traité des Arbres et Arbustes i. 149 (1755).
[2] Mill. Fig. Pl. i. 60, t. 89. fig. 2 (1760).
[3] Torr. Fl. N. Y. i. 195 (1843).
[4] Peck, 34th Ann. Rep. State Mus. N. Y. 53 (1891).
[5] Name inserted in quotation by L. H. Bailey.
[6] Name inserted in quotation by L. H. Bailey.
[7] Porter as quoted by Bailey, The Cultivated Native Plums and Cherries, 64 (1892).

and the points appressed."[1] Similarly Wight describes it: "Leaves broadly lanceolate . . . or sometimes even obovate to elliptic or elliptic-obovate . . . usually serrate from below the middle . . . pale or even somewhat glaucous-like below." How closely these descriptions of P. *cuneata* match Willdenow's account:

"*17. PRUNUS *Susquehanae.*

P. pedunculis subsolitariis, foliis obovato-oblongis, subtus glaucis, serratis, basi integerrimis.

Prunus Susquehanae *Hortulan.*

Habitat in America *boreali.*"

The identity of *Prunus susquehanae* and *P. cuneata* is further shown by the fact that this shrub is well known in eastern Pennsylvania, as indicated by Porter's statement above quoted, by Long's reference to it as "on rocky slopes and summits of the Poconos and Kittatinnies,"[2] by Clute's getting it on a "Wooded hillside"[3] of the Upper Susquehanna, by characteristic specimens from Lancaster County nearer the mouth of the Susquehanna, and by Rafinesque's citation of the original locality of his *P. cuneata*: "On the mountains of Pennsylvania."

Briefly summarized, the nomenclature and ranges of our three Sand Cherries may be stated as follows.

Prunus pumila L. Mant. 75 (1767); Bailey, Cycl. Am. Hort. 1450 (1901); Wight, Native Am. Sp. Prunus, 65 (1915). *Cerasus canadensis* Mill. Gard. Dict. ed. 8. (1768). *C. glauca* Moench, Meth. 672 (1794). *C. pumila* (L.) Michx. Fl. Bor.-Am. i. 286 (1803) as to name-bringing synonym only.

The following are characteristic specimens. New York: sand dunes by L. Ontario, Selkirk, *Fernald, Wiegand & Eames*, no. 14,355. Ontario: shore of L. Ontario, Wellington, *Fowler;* Pt. Edward, L. Huron, *J. Macoun*, no. 34,728; Johnston's Harbor, L. Huron, *J. Macoun*, no. 34,727; sandy shore of L. Superior, Agawa Bay, *Pease*, no. 18,049. Michigan: sand hills, New Buffalo, *Lansing*, no. 3259; Castle Park, *Greenman*, no. 2408; sandy soil, border of Douglas Lake, *Ehlers*, no. 316; gravelly soil, Goose Island, *Ehlers*, no. 429. Indiana: sand dunes by L. Michigan, Indiana Harbor, *Hill*, no. 118; sand ridges near L. Michigan, Edgemoor, *Lansing*, no. 2695; tops of new dunes, Port Chester, *Peattie*. Illinois: shores of L. Michigan, Chicago, *Vasey et al.*; sand dunes by L. Michigan near Beach, *Greenman*, nos. 1992, 2025. Wisconsin: Rock Co., *Hale*.

[1] Bailey, l. c. 63 (1892).

[2] Long, Rhodora, xviii. 69 (1916).

[3] Clute, Fl. Upper Susq. Suppl. 1: 4 (1901) as *P. pumila*.

P. DEPRESSA Pursh, Fl. Am. Sept. i. 332 (1814). *Cerasus pumila Michx.* Fl. Bor.-Am. i. 286 (1803) as to shrub described. *P. pumila* Torr. Fl. N. Y. i. 195 (1843), not L.

The following are typical specimens. QUEBEC: beach of Grand River, Gaspé Co., *G. H. Richards*; ledgy banks of Restigouche River, Matapedia, *Fernald*; Grand Discharge, Lake St. John, *Kennedy* (form with unusually broad leaves and short stones); shores, Oka, *Victorin*, no. 670. NEW BRUNSWICK, Tom's Island, Restigouche River, *Hay*. MAINE: gravel beach of St. John River, Township XII, Range 16, *St. John & Nichols*, no. 2357; gravelly shore of St. John R., St. Francis, *Fernald*, no. 28; gravelly river beach, Fort Kent, *Fernald*, no. 2292, *Robinson & Fernald*, no. 223; *Pease*, no. 2333; beach of Aroostook River, Fort Fairfield, *Fernald*, no. 1951; argillaceous ledges by Penobscot River, Winn, *Fernald & Long*, no. 13,947; argillaceous ledges by Penobscot R., Milford, *Fernald*, no. 13,945; rocky bank of Kennebec River, Caratunk, *Fernald;* sandy shores of Kennebec R., Skowhegan, *Furbish*; river gravel of Sandy R., Phillips, *Knowlton;* sandy shore of Sandy R., Farmington, *Knowlton*; shore of Androscoggin R., Gilead, *Furbish*; ledgy shore of Kennebec R., Waterville, *Fernald*, no. 2611. NEW HAMPSHIRE: sands and gravels of Pemigewasset R., Plymouth, *Faxon*, *Fernald*, no. 11,738, *Knowlton;* sandy and gravelly beach of Pemigewassett R., Ashland, *Fernald*, no. 15,242; argillaceous ledges by Connecticut R., Bath, *Fernald*, no. 15,544; sandy and rocky shores of Connecticut R., Planfield, *Eggleston*; gravelly bank of Connecticut R., Walpole, *Fernald*, no. 123, *Blanchard et al.* VERMONT: gravel of White R., Hartland, *Knowlton*; Hartland, *Eggleston*, no. 1984; Bellows Falls, *Eggleston*, no. 2673; sandy banks of West R., Newfane, *Grout.* MASSACHUSETTS: bank of Deerfield R., Charlemont, *Hunnewell, Macbride & Torrey.* ONTARIO: vicinity of Ottawa, *Rolland*, no. 7159.

P. SUSQUEHANAE Willd. Enum. Pl. Hort. Berol. 519 (1809). *P. cuneata* Raf. Ann. Nat. 11 (1820); Bailey, Cult. Native Plums and Cherries, 63 (1892); Wight, Native Am. Sp. Prunus, 67 (1915). *P. pumila*, var. *cuneata* (Raf.) Bailey, Cycl. Am. Hort. 1451 (1901).

The following are characteristic specimens. MAINE: Fryeburg, *J. Blake*; sandy shore of Lovewell P., Fryeburg. *Farlow*; South Poland, *Furbish*; Brunswick, *Furbish*; common and characteristic on dry sandy barrens, Limington, *Fernald, Long & Norton*, no. 13,944. NEW HAMPSHIRE: sandy margin of West Ossipee P., *Wm. Boott*; with *Hudsonia* on shore of L. Ossipee, *Farlow*; border of pitch pine woods, Ashland, *Fernald*, no. 15,240; hillside, open hard woods, Derry, *Batchelder*; borders of sandy woods, Nashua, *Robinson*, no. 712. VERMONT: sand plain, Essex Junction, *Knowlton*; sand banks, Burlington, *Eggleston*, nos. 7 and 1982; sand plain, Colchester, *Blake*, no. 2143. MASSACHUSETTS: low ground near Bartholemew's P., Peabody, *Sears*; gravel pit, Lowell Junction, *Pease*, no. 2450; dry bank, Tewksbury, *Knowlton;* Concord, *Hoar*; sandy hill, Wilmington,

Williams et al.; rocky roadside, Woburn, *Pease*, no. 7659; clearing in dry woods, Walpole, *Rich*; Powisset Cliff, Dover, *Pease*, no. 7747; Hawk Hill, Blue Hills, *Kidder*; rocky shrubby hill, Sharon, *Williams*; dry ground, Norfolk, *Ware et al.*; sandy woods, Franklin, *Hunnewell*; dry sandy clearing, Lakeville, *Fernald & Long*, no. 9707; open sandy soil near Darby Station, Plymouth, *Fernald, Hunnewell & Long*, no. 9708; sand plain, Montague, *Fernald et al.*; wet sand by Connecticut R., Gill, *St. John & Weatherby*; dry ledges at summit of Mt. Tom, *Forbes & Wheeler*; sand, Southwick, *Murdoch & Schweinfurth*; Alum Hill, Sheffield, *Hoffmann*. Rhode Island: dry soil, Cumberland, *Knowlton*; Providence, *Williams*. Connecticut: Plainville, *L. Andrews*, no. 222; sandy roadside, Southington, *Bissell*, no. 194; exposed top of Wolcott Mt., Southington, *Blewitt*, no 1734; dry exposed ledges, Waterbury, *Blewitt*, no. 205. New York: Ausable Point, *Eggleston*; sandy thicket, Albany, *House*, no. 6046; South Hill, Ithaca, *F. C. Curtice*; hummocks, South Hill Marsh, Ithaca, *Eames & Wiegand*, no. 2671. New Jersey: high rocky hills, High Point, *Mackenzie*, no. 4197. Pennsylvania: serpentine barrens, near Pleasant Grove, Lancaster Co., *Heller & Small*. Michigan: sandy ground near Au Gres, Arenac Co., *Dodge*, no. 4; Agricultural College, *Wheeler*; sand dunes by L. Michigan, Indiana Harbor, *Hill*, no. 117. Wisconsin: sandy ridges and shores, *Schuette*. Minnesota: Spring Grove, *Rosendahl*, no. 307. Manitoba: Lake Winnipeg Valley, *Bourgeau*.

Gray Herbarium.

NOTES ON NEW ENGLAND HEPATICAE,—XVII.[1]

Alexander W. Evans.

In the fifth series of these Notes[2] the writer recognized the genus *Ricciella* A. Br. as valid, separating it from *Riccia* L. on the basis of certain anatomical differences in the thallus. It has since been demonstrated that these differences are inconstant and that the genus *Ricciella* ought not to be maintained.[3] The four New England species referred to *Ricciella* should therefore be known as *Riccia crystallina* L., *Riccia fluitans* L., *Riccia membranacea* Gottsche & Lindenb. and *Riccia Sullivantii* Aust.

Another genus based on equally vague anatomical characters is *Neesiella* Schiffn., of which two species, *N. pilosa* (Hornem.) Schiffn.

[1] Contribution from the Osborn Botanical Laboratory.

[2] Rhodora **9**: 56. 1907.

[3] See Evans, Bryologist **25**: 81. 1922. See also Howe, North Am. Flora **14**: 11 1923.

and *N. rupestris* (Nees) Schiffn., have been reported from New England.[1] This genus should be included in the genus *Grimaldia* Raddi, and the New England species should be known as *G. pilosa* (Hornem.) Lindb. and *G. rupestris* (Nees) Lindenb.[2]

In the present series of Notes the nomenclature of *Fossombronia brasiliensis* is considered, *Bazzania denudata* is recognized as a valid species and compared with the closely related *B. tricrenata*, certain species recently segregated from *Scapania nemorosa* are discussed, and a species of *Lejeunea* is reported for the first time from New England. In conclusion a few additions to local state floras are reported and a revised census of New England Hepaticae is given.

1. Fossombronia brasiliensis Steph. Mém. Herb. Boissier 16: 28. [Sp. Hepat. **1**: 382.] 1900. *F. angulosa* Aust. Hep. Bor.-Amer. *119*. 1873 (not Raddi). *F. salina* Lindb. Acta Soc. Sci. Fenn. **10**: 583. 1875 (*nomen subnudum*); Evans, Rhodora **3**: 9. 1901. In the place last cited *F. salina* was first definitely reported from Connecticut and from New England. A few years ago[3] a number of additional stations from a wide range of territory were recorded, extending the known distribution of the species into the West Indies. At the same time the very close relationship between *F. salina* and *F. brasiliensis* was emphasized, and it was pointed out that the only important difference between them (according to the published descriptions) was in the inflorescence, *F. salina* being monoicous, while *F. brasiliensis* was said to be dioicous. It was further pointed out that the name *F. brasiliensis*, on account of Lindberg's inadequate publication of *F. salina*, would have to be maintained, if it should ever be proved that Stephani's plant was really monoicous and that the two species were therefore synonymous. As a matter of fact Schiffner[4] had already demonstrated a monoicous inflorescence in *F. brasiliensis*, stating that the antheridia and archegonia were irregularly mixed together on the upper surface of the stem, and on the basis of his account the reduction of *F. salina* to synonymy would have been justified. In order to be quite certain of this reduction, however, the writer has examined three Brazilian specimens of *F. brasiliensis* from the Boissier Herbarium at Geneva, kindly sent for study by Professor Chodat.

[1] See Evans, Rhodora **14**: 210, 1912; **16**: 64. 1914.
[2] See Bryologist **22**: 57. 1919. Also North Am. Flora **14**: 43. 1923.
[3] Bryologist **17**: 87. 1914.
[4] Oesterr. Bot. Zeitschr. **61**: 326. 1911.

These specimens are the following, the first being presumably the type of the species: Apiahy, *Puiggari 82*; Santa Catharina, *Ule 51*; and Rio de Janeiro, *Ule 108*. In the first two of these specimens spores are present and agree in all essential respects with those of *F. salina* from the United States and elsewhere. Any doubt regarding the identity of the two species is thus dispelled.

The known range of *F. brasiliensis* now extends from southern New England to Brazil. Many new stations have come to light during the past few years, of which the following are perhaps of particular interest: Kyle, Texas, *F. McAllister 1;* near Guadalajara, Mexico, *Barnes & Land 150*; Santa Ana, Isle of Pines, Cuba, *Britton & Wilson 15684*; Maricao, Porto Rico, *E. G. Britton 4103*; Port of Spain, Trinidad, *R. Thaxter*; and Arima, Trinidad, *Britton, Britton & Brown 2399*. In New England the species is still known with certainty only from Connecticut. In the writer's revised list of New England Hepaticae,[1] it is listed with a "—" sign from Rhode Island, on the basis of an old record for "*F. angulosa*" in Bennett's Catalogue. In June, 1922, Miss Annie Lorenz collected at Glocester in the same state a large sterile *Fossombronia* that probably represents *F. brasiliensis*, but it would be wisest not to report it definitely from Rhode Island until plants with capsules have been found.

2. Bazzania tricrenata (Wahlenb.) Trevis. Mem. Ist. Lomb. 13: 414. 1877. *Jungermannia tricrenata* Wahlenb. Fl. Carpat. 364. 1814. Other synonyms will be noted below. On rocks. Maine: tableland, Mt. Katahdin, 4300 ft. alt., *A. Lorenz* (new to Maine, the author's earlier record having been based on the following species). New Hampshire: Mt. Washington: *J. A. Allen, W. G. Farlow, Underwood & Cook, A. W. E.*; Mt. Monroe, *A. W. E.*; Lakes of the Clouds, *J. A. Allen, A. W. E.*; Mt. Adams, *W. G. Farlow*; Kings Ravine, *A. Lorenz 62, A. W. E.*; Crystal Cascade, White Mountains, *Underwood & Cook* (distributed in Hep. Amer. *53*, as *B. deflexa*); Carter Notch and Dome, *A. W. E.*; Flume, *C. C. Haynes, A. Lorenz & A. W. E.*; Bear's Cave, Franconia Notch, *E. Faxon*; Jackson, *J. A. Allen*. Vermont: Mt. Mansfield, *W. G. Farlow, A. W. E.* The species has been listed from New Hampshire and Vermont by the writer (Rhodora **5**: 171. 1903, as *B. triangularis*; **10**: 190. 1908; **15**: 23. 1913), while Miss Lorenz has definitely reported the Flume specimens (Bryologist **11**: 114. 1908). The specimens in Austin's

[1] Rhodora **15**: 22. 1913. See also Rhodora **14**: 224. 1912.

Hep. Bor.-Amer. *80*, distributed as *Mastigobryum deflexum*, are likewise referable to *B. tricrenata*; they were collected on "rocks on the higher mountains" and probably came from New Hampshire. The species is known also from West Ranton, Newfoundland, *A. E. Waghorne 163, 164*, and from Mt. Albert, Gaspé County, Quebec, *J. A. Allen 27, J. F. Collins 4202* (see Evans, Bryologist **19**: 29. 1916), but most of the other records from eastern North America were based on the next species.

The wide range of variability exhibited by *B. tricrenata* has long been recognized. Its extreme forms are so different in appearance that they would undoubtedly be considered distinct species if they were not connected by imperceptible intergradations. In its more typical development, as represented by the figures of Macvicar[1] and Müller,[2] the characters are distinct and striking. The plants are pigmented with brown, sometimes very deeply so, and grow in compact mats or scattered among mosses. The individual stems tend to be suberect; they give off numerous flagelliform branches from the axils of the underleaves and occasional lateral branches of the *Frullania* type, the latter forming narrow angles with the stem. The ovate-triangular and persistent leaves are approximate or imbricate and are strongly convex, when seen from above; the dorsal base is rounded or subauriculate; and the apex shows three sharp teeth separated by narrow sinuses, the acroscopic tooth projecting slightly beyond the others. The underleaves are distant to approximate and quadrate-orbicular in outline; the apex is broad and truncate and shows four rounded to acute teeth more or less clearly; while the slightly bulging sides are entire or vaguely toothed. Diverging from this type are forms in which the leaves are distant, less convex, and acute or bidentate; while the underleaves may have only two or three vague teeth or be almost entire. It is not unusual, in fact, for a branch of a typical plant to exhibit divergent features of one sort or another.

The most thorough attempt to define and describe the numerous varieties and forms of *B. tricrenata* was made in 1838 by Nees von Esenbeck,[3] who discussed the species under the name *Herpetium deflexum*. He recognized five subdivisions of the first rank (or varieties), giving them the names α *tricrenatum*, β *implexum*,

[1] Student's Handb. British Hepatics 317. *f. 1–4*. 1913.

[2] Rabenhorst's Kryptogamen-Flora 6[2]: *f. 76. 79*. 1914.

[3] Naturgeschichte der europ. Lebermoose 3: 57–74. 1838.

γ *dexexum*, δ *flaccidum*, and ε *pygmaeum*, but acknowledging their unstable character. Under the first of these he recognized subdivisions of a lower rank (forms and sub-forms), giving them the names α 1 *commune*, α 1*. *fuscum* and α 2 *elongatum*; under the second he recognized the subdivisions β 1 *laxius*, β 2 *innovans*, β 2* *julaceum* and β 3 *gemmiparum*; but under the others, γ, δ and ε, he distinguished no lower subdivisions. As synonyms of certain of these subdivisions he cited the following species, which had been either published by earlier writers or distributed in exsiccatae under manuscript names. *Jungermannia tricrenata* Wahlenb. (1814), under α 1; *J. triangularis* Schleich. (1805), *nomen nudum*, under α 1 and α 1*; *J. deflexa* Mart. (1817), under α 1*; *Pleuroschisma flaccidum* Dumort. (1831), under β 1; *P. parvulum* Dumort. (1831), under β 2; and *Jungermannia flaccida* Schleich. (1821), *nomen nudum*, under δ. He chose the name *deflexum* for the species, rather than *tricrenatum*, on account of an inaccuracy in the original description of *Jungermannia tricrenata*; but of course this would not now be considered a sufficient reason for invalidating Wahlenberg's species.

Nees von Esenbeck's subdivisions were taken over bodily in the Synopsis Hepaticarum (1845), where the species appears under the name *Mastigobryum deflexum* Nees. They were adopted also by Lindenberg and Gottsche in their monograph of *Mastigobryum*,[1] published a few years later, the subdivisions α 1, α 2, β 1, β 2*, γ, δ and ε being separately illustrated on their plate. The more typical condition of the species, as described above, is clearly shown by *f. 1–4*, which illustrate α 1 *tricrenatum commune*. Subsequent writers have either ignored Nees von Esenbeck's subdivisions altogether or have used his names very sparingly.

For many years the species continued to be known by the name *Mastigobryum deflexum*, but this name has gradually been superseded by other names. By those who recognize the genera of S. F. Gray the name *Bazzania tricrenata* is usually employed. In 1875, however, Lindberg[2] revived for the species the old specific name *triangularis* of Schleicher, forming the combination *B. triangularis* (Schleich) Lindb. He apparently dated the name from the year 1805, when Schleicher distributed specimens of *Jungermannia*

[1] Spec. Hepat. *Mastigobryum* 108. *pl. 18.* 1851.
[2] Acta Soc. Sci. Fenn. **10:** 499. 1875.

triangularis in his Plant. Crypt. Helvetiae. Since it is now admitted[1] that Schleicher's *J. triangularis* is a *nomen nudum*, Lindberg's combination *B. triangularis*, of 1875, represents the first adequate publication of the specific name *triangularis* for the plant in question and should not be allowed to replace the name *tricrenata*, which clearly dates from 1814.

1900 Pearson[2] added to the nomenclatorial difficulties involved by recognizing both *B. tricrenata* and *B. triangularis* as valid species. He listed, as synonyms of the latter, *Jungermannia triangularis* Schleich. and *J. deflexa* Mart. According to Nees von Esenbeck, however, as already pointed out, both of these species are synonyms of his *Herpetium deflexum α tricrenatum*, under which he naturally cites, as another synonym, *J. tricrenata* Wahlenb. It would appear therefore that *J. triangularis* and *J. deflexa* should both be cited as synonyms of *Bazzania tricrenata*, when this is accepted as a valid species, and there is nothing in Lindberg's writings to indicate that he ever interpreted his *B. triangularis* in a different and more restricted sense. Pearson's *B. triangularis* of 1900 thus becomes a homonym of Lindberg's *B. triangularis* of 1875, in case each represents a distinct species.

The validity of Pearson's species, however, is not above question, and it is not at all certain that it represents a definite and clearly defined series of forms. According to his observations it differs from *B. tricrenata* in the following respects: the plants are smaller; the stems are more slender and usually, but not invariably, dichotomously "innovantly" branched; the leaves, which soon fall away, are proportionately shorter (except in the var. *flaccida*); the leaf cells are "rounder," with large and distinct trigones; and the underleaves are patulous and usually subentire. In the var. *flaccida* the leaves are described as narrower and often entire and apiculate. Except for the fact that the leaves are said to be caducous, instead of persistent, these differences might well come within the range of variability of such a species as *B. tricrenata*, and Pearson himself questions whether his *B. triangularis* may not be either the male plant or a mere variety of *B. tricrenata*.

As a matter of fact the specimens cited under *B. triangularis* do not all show the caducous habit. In the material from Tyn-y-groes

[1] See Evans, Rhodora **10**: 190. 1908.
[2] Hep. British Isles 130, 132. *pl.* *48*, *49*. 1900.

in Wales, for example (Carrington & Pearson, Hep. Brit. Exsic. *124*), which Pearson used for most of his illustrations, the leaves are distant and often greatly reduced in size but show no evidence of falling away. His other figures were drawn from specimens collected by Jack in Baden (Gottsche & Rabenhorst, Hep. Europ. *198*, *401*); the first was distributed under the name "*Mastigobryum deflexum* var. β *flaccidum* Nees" and the second under the name "*M. deflexum* β *implexum*." Both show caducous leaves to a greater or less extent and also differ from the Welsh specimens in other respects.

In 1912 Macvicar[1] followed the example of Pearson and recognized both "*Bazzania tricrenata* (Wahl.) Pears." and "*B. triangularis* Pears.," dating them from the year 1900. According to his account *B. triangularis* "can generally be separated in Britain without difficulty from *B. tricrenata*," and "the typical forms of the two plants never grow in the same patch." He described two principal forms of *B. triangularis* and a third, apparently less important, form. In the first the leaves are mostly distant, never falcate, and usually (but not always) acute, while the underleaves are oblong-quadrate and entire; in the second the leaves are approximate, sometimes falcate, and often two- or three-toothed at the apex; in the third the leaves are narrow, nearly flat, and frequently three-toothed. He brings out the additional fact that the cells of *B. tricrenata* are 24–30 μ in diameter, while those of *B. triangularis* are only 16–25 μ, but makes no allusion to the early falling away of the leaves. His illustrations clearly represent the first of his three forms, which is essentially like the Welsh plant figured by Pearson, while h's second and third forms would agree better with Jack's Baden specimens.

In 1914 Schiffner distributed specimens of *Bazzania triangularis* (Schleich.) Lindb. and "*B. tricrenata* (Wahlenb.) Pears." in his Hep. Europ. Exsic. *637–650* and commented on them in the thirteenth series of his "Kritische Bemerkungen."[2] He expresses the opinion that these species are distinct in Scotland, but connected by transitional forms in the mountains of Central Europe. Under *B. triangularis* he issued Scotch specimens, illustrating Macvicar's first form, as forma *laxa*; French and Italian specimens, illustrating his second form, as forma *densior*; and Bohemian specimens, representing a new var. *intercedens*, stating, in regard to the last, that it might

[1] Student's Handb. British Hepatics 317, 318. 1912.
[2] Privately printed at Gottesberg, Silesia.

perhaps be better referred to *B. tricrenata.* In connection with the Italian specimens of his forma *densior* he emphasized the fact that the leaves were very caducous and implied that this condition was distinctive of *B. triangularis.* Under *B. tricrenata* he distinguished, in addition to the typical form, the vars. *subintegristipula* Schiffn., *cavernarum* Schiffn. and *pratensis* Schiffn., the last two being proposed as new. It is unfortunate that he made no attempt to correlate these varieties with the subdivisions of Nees von Esenbeck.

In contrast to the views of Pearson, Macvicar and Schiffner, those of Stephani may be cited. In discussing "*Mastigobryum triangulare* (Schleicher)"[1] in 1908, he made no mention of "*Bazzania triangularis* Pears." but listed both *Jungermannia triangularis* Schleich., and *J. tricrenata* Wahlenb. as synonyms. He alluded to a wholly etiolated forma "*implexa*" but gave no description of it and even denied its varietal rank on the ground that it was merely dwarfed by unfavorable environmental conditions. Müller takes an intermediate position between these extremes. In 1913 he described a "var. *implexa* (Nees) under *Pleuroschisma tricrenatum* (Wahlenb.) Dumort.,[2] citing "*Bazzania triangularis* Pearson" as a synonym. In this variety he emphasized the scarcely convex and distant leaves, that easily become detached, and the squarrose orbicular underleaves; and he stated further that the variety was so distinct that it might at first sight be considered a valid species, except for the presence of intermediate forms connecting it with typical *P. tricrenatum.* He admitted, however, that these connecting forms were infrequent, even in Central Europe. Müller's figure of the var. *implexa* agrees on the whole with Lindenberg and Gottsche's figures of *Mastigibryum deflexum* β 1 *implexum laxius* (*f. 11-13*) and represents Schiffner's forma *densior* of *B. triangularis*, rather than his forma *laxa*.

It will be seen from the above citations that European writers are still at variance with regard to *B. tricrenata,* and that those who segregate off "*B. triangularis* Pears." do so somewhat tentatively. It will be seen further that those who do recognize *B. triangularis* include under it not only forms with caducous leaves but also slender forms with persistent leaves (the forma *laxa* of Schiffner). In the writer's opinion the presence of caducous leaves is a feature of considerable importance from a taxonomic standpoint. Such leaves represent a

[1] Bull. Herb. Boissier II. **8**: 851. 1908.

[2] Rabenhorst's Kryptogamen-Flora **6**²: 270. *f. 80.* 1913.

form of vegetative reproduction, comparable with the gemmae found in other genera of the Hepaticae. It is admitted that the presence or absence of gemmae in certain cases affords a convenient method for distinguishing between closely related species. The gemmiparous habit of *Lophozia heterocolpa* (Thed.) M. A. Howe, for example, makes it possible to separate this species at a glance from *L. Muelleri* (Nees) Dumort., in which gemmae are unknown. If this reasoning is applied to caducous leaves (Bruch- or Brutblätter of Correns) their presence, if supported by morphological features of even a slight character, might well be made the basis for the segregation of plants showing this feature from a species in which the leaves are clearly persistent. In Schiffner's forma *densior* of "*Bazzania triangularis* Pears." and in Müller's var. *implexum* of *Pleuroschisma tricrenatum* these conditions are apparently realized. The forms designated by these names are clearly identical and differ from typical *B. tricrenata* not only in having caducous leaves but also in certain features of the leaves themselves. Instead of being strongly convex and narrowing rather abruptly from a broad and rounded or subauriculate base, these leaves are plane or only slightly convex and taper more gradually from a narrower and scarcely rounded base. In connection with the var. *implexum*, Boulay[1] makes the interesting observation that it descends from the higher mountains into the lower woody zone, while the typical form does not descend below the middle woody zone. There is thus a slight difference in altitudinal distribution to support the morphological differences.

If a species of the character just outlined is recognized, the choice of a name for it is beset with difficulties. "*B. triangularis* Pears." should apparently be typified by the forma *laxa* of Schiffner with persistent leaves, but the use of this name in any sense would lead to confusion on account of the older *B triangularis* Lindb. Nees von Esenbeck's *Herpetium deflexum* β *implexum* was probably a mixture of several forms, but his β 1 *implexum laxius* was apparently the same as Müller's *Pleuroschisma tricrenatum* var. *implexum*. Under β 1 Nees von Esenbeck, as shown above, included *Pleuroschisma flaccidum* Dumort. as a synonym, and Dumortier's description[2] certainly agrees with Müller's, except that no mention is made of caducous leaves. If it could be established that these were present

[1] Muscinées de la France **2**: 50. 1904.
[2] Syll. Jung. 71. 1831.

in Dumortier's plant, the specific name *flaccida* would become available; otherwise some other choice would have to be made.

According to our present knowledge the true *B. tricrenata* is largely restricted in eastern North America to the higher mountains of Quebec and New England. It is usually replaced at lower altitudes by a species in which the caducous habit of the leaves is even better marked than in the European "*Pleuroschisma tricrenatum* var. *implexum.*" An account of this species follows.

(*To be continued.*)

Empetrum nigrum L., forma **purpureum** (Raf.), n. comb. *E. purpureum* Raf. New Fl. pt. iii. 50 (1836) as to description. *E. rubrum* Durand, Proc. Acad. Sci. Phila. (1863) 95, not Vahl. *E. nigrum*, var. *purpureum* (Raf.) DC. Prodr. xvi. pt. 1: 26 (1869); Simmons, Vasc. Pl. Ellesmerel. 43 (1906); Fernald & Wiegand, Rhodora, xv. 212 (1913).

As pointed out by Professor Wiegand and me in 1913 there has always been great doubt as to what Rafinesque had from Labrador as his basis for *E. purpureum*. His description called for *E. nigrum* with purple fruit, but we had never met such a plant. On July 22, 1922, however, while exploring the almost unknown region of Mt. Logan in Matane County, Quebec, Professor A. S. Pease and I found that the *Empetrum nigrum* on bare hornblende-schist ledges near the summit (about 1100 m.) of Mt. Fortin[1] had the ripe berries purple. This shrub, the first I had met agreeing with Rafinesque's account, was clearly *E. nigrum* in all characters except that its berries were not black. It was obviously only a color-form.—M. L. Fernald, Gray Herbarium.

[1] Mt. Fortin is the bare-topped mountain to the northeast of the main ridge of the Mt. Logan range and separated from Mt. Logan by a great basin, through which flows Ouillet Brook, and at the east or head of the basin by a pass with an elevation of about 3000 feet where are found a small sphagnum-carpeted pond (Dry Pond of our field notes), which is a source of Ouillet Brook, and to the east a small spring-fed lake which empties to the south around the abrupt eastern end of Mt. Logan. We estimated the summit of Mt. Fortin at about 3600 feet (1100 m.). We were glad to associate with it the name of our guide, M. Joseph Fortin of Ste. Anne des Monts, who, with M. Samuel Coté and other guides, had accompanied Professor J. F. Collins and me to Mts. Albert and Tabletop in 1905 and 1906, and who had guided Professor A. P. Coleman in the Shickshock Mts. in 1918 (see Coleman, *Physiography and Glacial Geology of Gaspe Peninsula, Quebec.*—Canad. Dept. Mines, Geol. Surv. Bull. No. 34: 30 (1922)).

Euphrasia canadensis in Vermont.—In Bulletin No. 3 (1908) of the Vermont Botanical Club, Professor M. L. Fernald called attention to the fact that *Euphrasia canadensis*, unknown in Vermont, occurs in the White Mountain region and had recently been found by Judge Churchill near the Vermont boundary in Quebec. It will, therefore, interest Vermont botanists to know that the plant is quite abundant in hillside pastures in parts of Richford, Montgomery and Enosburg. I have sent specimens to Mr. G. L. Kirk of Rutland.—Francis H. Sargent, Wolfeboro, New Hampshire.

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THE GENTIAN OF THE TIDAL SHORES OF THE ST. LAWRENCE.

M. L. FERNALD.

(Plate 139.)

IN describing *Gentiana ciliata* of the European mountains, a characteristic species of the Alps with linear-lanceolate leaves and large blue corollas with ciliate lobes, Linnaeus gave the range: "*Habitat* in Helvetiae, Italiae, Canadae *montibus*."[1] The description and references indicate clearly the European plant, so that there has never been any doubt regarding the true identity of *G. ciliata*; but no Fringed Gentian has ever been known from the "mountains of Canada" [of Linnaeus's time, *i. e.* presumably Quebec]. Consequently, there has been doubt as to what Canadian plant Linnaeus saw which could have been confused with the European *G. ciliata*, described "angustifolia" and "corollis quadrifidis margine ciliatis." The New Englander naturally thinks of *G. crinita* but that species has the upper leaves ovate or ovate-lanceolate and broadly rounded or subcordate at base and Linnaeus would hardly have identified it with the narrow-leaved *G. ciliata*. Furthermore, in his herbarium, as shown by memoranda made at various times by Asa Gray, Linnaeus had *G. crinita* set apart as a distinct species though under an unpublished name.

In 1860 the late Dr. Charles Pickering collected at Quebec a gentian which was identified by Dr. Gray in the *Synoptical Flora* as *G. serrata* Gunn., a Scandinavian plant which it somewhat suggests, and to which Gray referred a large number of American plants now

[1] L. Sp. Pl. ed. 2: 334 (1762).

recognized as wholly distinct American species,—*G. nesophila* Holm of western Newfoundland, Anticosti and the Mingan Islands; *G. procera* Holm, a large-flowered plant extending from Manitoba eastward to Niagara County, New York; *G. Macounii* Holm, of the Canadian prairies eastward to James Bay; and other endemic and very characteristic species occurring from the Rocky Mountains to the Sierra Nevada. The Pickering specimen preserved in the Gray Herbarium is a dwarf and hardly recognizable individual, but in various details it is clearly not the Norwegian *G. serrata* but belongs in the American series of species already ably monographed by Dr. Theodor Holm,[1] who has clearly pointed out many characters separating the group of American plants from the European. For want of a better place to put it the Pickering specimen had recently been tentatively placed by the present writer with the Anticosti and Newfoundland *G. nesophila*; and in 1916 Brother Marie-Victorin distributed as *G. nesophila* from L'Islet, about forty miles east of Quebec, fruiting and somewhat fragmentary specimens which clearly belong with the Pickering plant but like it are not satisfactorily identified with the Anticosti and Newfoundland material. And finally, thanks to the intensive botanizing of Brothers Victorin and Rolland, a beautiful series of the plant is at hand from both above and below the city of Quebec. These new collections, showing abundant specimens in flower and fruit and in all sizes from small and simple individuals to large freely branching plants, at once demonstrate that the plant from the neighborhood of Quebec is a thoroughly distinct and hitherto unrecognized species with affinities about midway between *G. Macounii*, *procera*, *nesophila* and *crinita*. This species, with which it is a keen pleasure to associate the name of the untiring investigator of the flora of the Province of Quebec who has brought together the first adequate representation of the plant, is apparently typical of the tidal shores of the St. Lawrence for about fifty miles, from Cap Rouge to L'Islet. This species is illustrated in Plate 139, kindly prepared by Miss Amelia Brackett of Radcliffe College. Brother Victorin states that it "is the only common Gentian in the neighborhood of the city of Quebec. It is distinctly a riparian species, growing on the tidal shores, often within the reach of high tides. I have found it plentifully everywhere I went on the shores. It is interesting to note that neither you nor I ever found it from

[1] Ottawa Nat. xv. 176–183 (1901).

Rivière-du-Loup eastward." But, since the tide extends with considerable strength to the outlet of Lake St. Peter, it is probable that its western limit is well beyond Cap Rouge. It may also have a more extended eastern range, but in several seasons at Rivière-du-Loup and at Bic the present writer has never met the plant.

The great interest of the new species, in connection with the European *G. ciliata*, lies in the fact that the small and unbranched specimens of Brother Victorin's material laid upon sheets of *G. ciliata* are quite indistinguishable from it until the technical details are examined. The technical differences are numerous: *G. ciliata* being a perennial with creeping rhizomes, the Quebec plant annual or biennial; and *G. ciliata* having the calyx less deeply cleft and the corolla-lobes strongly fimbriate on the lower margins, the Quebec plant having the lobes with only short marginal teeth. The superficial resemblance of the two is so striking, however, that it would seem as if we at last know what plant of Canada led Linnaeus to cite his *G. ciliata* from "Helvetiae, Italiae, Canadae *montibus.*" In August, 1749, Pehr Kalm botanized extensively about Quebec,—from Trois Rivières on the west to Les Eboullement on the east, thus covering the whole range of the gentian of the tidal shores. It seems wholly probable, in fact almost inevitable, that this pupil of Linnaeus should have found the gentian, which flowers in August, and that Linnaeus, identifying it with the plant of the mountains of Switzerland and Italy assigned it a mountain habitat in Canada as well.

This endemic plant of the St. Lawrence should be called:

Gentiana (Crossopetalae) **Victorinii**, n. sp. Biennis; caule simplici vel cum ramis valde ascendentibus instructo 3–4 dm. alto glabro 4-angulato; foliis imis rosulatis spathulatis brevibus, mediis superioribusque 4–9-jugis lineari-lanceolatis acutis vel acutiusculis paulo carnosis 2–5.5 cm. longis 2–6 mm. latis; pedunculis 2–9 cm. longis; calycibus herbaceis inequaliter ad mediam 4-lobatis, lobis apice subulato-acuminatis longioribus lanceolatis 0.6–1.5 cm. longis, brevioribus ovatis 0.45–1.2 cm. longis, carinis glabris vel vix granulosis; corollis azureis 2–4 cm. longis ad mediam partem 4-lobatis, lobis oblongo-obovatis obscure venosis valde ascendentibus apice rotundato interdum etiam marginibus dentatis vel lacerato-fimbriatis; filamentis alatis eciliatis; ovario stipitato, stipite circa 5 mm. longo, stylo circa 2 mm. longo; capsula corolla breviore subsessile; seminibus valde papillosis.

Biennial: stem simple or with strongly ascending branches, 1–4 dm. high, glabrous, 4-angled: leaves 4–9 pairs below the primary peduncle; the lower spatulate; the middle and upper linear-lanceolate,

acute or acutish, somewhat fleshy, the median 2–5.5 cm. long, 2–6 mm. wide: peduncles 2–9 cm. long: calyx herbaceous, unequally cleft to about the middle, 4-lobed; the lobes all subulate-acuminate at tip; the longer lanceolate, 0.6–1.5 cm. long; the shorter ovate, 0.45–1.2 cm. long; the keels glabrous or only obscurely granulose: corolla deep-blue, 2–4 cm. long, cleft nearly half its length, 4-lobed; the lobes oblong-obovate, only obscurely veiny, strongly ascending, uniformly dentate to lacerate-fimbriate on summit and often on the sides: filaments winged, naked: pistil fusiform, stipitate; the stipe about 5 mm. long; style definite, about 2 mm. long; stigma subreniform: mature capsule shorter than the corolla, becoming subsessile: seed conspicuously papillose.—Quebec: tidal shores of the River St. Lawrence from above the city of Quebec to L'Islet. The following specimens have been studied. Cap-Rouge, près du Pont de Québec, sur le rivage à portée de la marée haute, August 9, 1922, *Fr. Rolland*, no. 16,070; Cap-Rouge, un mille plus haut que le Pont de Québec, sur le rivage à portée de la marée, August 9, 1922, *Fr. Marie-Victorin*, no. 16,073 (type in Gray Herb.); Quebec, 1860, *Charles Pickering*; rivage, à portée de la marée, St.-Laurent de l'Ile d'Orleans, August 6, 1922, *Marie-Victorin*, no. 17,071; rocks near the shore, L'Islet, August, 1916, *Marie -Victorin*, no. 3183.

The relationships of *G. Victorinii* and the other species of the section *Crossopetalae* in eastern America are indicated in the appended key.

A. Upper leaves ovate to ovate-lanceolate, broadly rounded or subcordate at base: upper half of the corolla-lobes fimbriate with a uniformly long fringe 2–6 mm long: capsule distinctly stipitate .... *G. crinita* Froel.
(Eastern states, north to Iowa, Wisconsin, Michigan, southern and eastern Ontario, western and central New York, Rutland Co., Vermont, Grafton Co., New Hampshire and central Maine.)

A. Upper leaves linear, linear-lanceolate, narrowly oblong or spatulate; fringe of corolla-lobes of varying lengths, often long below but of short triangular teeth (less than 2 mm. long) above; capsule sessile or stipitate B.

B. Upper leaves linear or linear-lanceolate, acute or acutish: calyx with all 4 lobes attenuate or the 2 broader at least acute C.

C. Elongate leaves (above the basal rosette) 8–13 pairs below the primary peduncle: calyx-lobes with strongly papillose-scabrous keels; the longer lobes 1–3 cm. long: corolla 2–5.5 cm. long, with spreading-ascending lobes: ovary nearly or quite sessile.................................. *G. procera* Holm.
(Manitoba and Iowa eastward to western New York.)

C. Elongate leaves (above the basal rosette) 3–7 (–9) pairs below the primary peduncle: calyx-lobes with smooth or only granulose keels; the longer lobes 0.5–1.5 cm. long; corolla 2–4 cm. long, with strongly ascending lobes.

Elongate leaves 4–9 pairs, linear-lanceolate, 2–6 mm. wide, ascending high on the plant: primary peduncle and its flower 1/5–2/5 (exceptionally –1/2) the entire height of the plant, 5.5–13.5 cm. long: the 2 broad calyx-lobes subulate-acuminate at tip: filaments naked: ovary with stipe about 5 mm. long .... *G. Victorinii* Fernald.
(St. Lawrence River, Quebec Co. to L'Islet Co., Quebec.)

Elongate leaves 3–7 pairs, linear, 1.5–4 mm. wide, mostly confined to the lower half of the plant: primary peduncle and its flower 2/3–4/5 the entire height of the plant, 0.6–2.1 dm. long: the 2 broad calyx-lobes merely acute or short-acuminate: filaments ciliate near the middle: ovary subsessile or with short thick stipe .... *G. Macounii* Holm.
(Montana and Alberta east to Minnesota and Rupert House, James Bay.)

B. Upper leaves oblong, spatulate or oblanceolate, obtuse or rounded at tip, mostly crowded at the lower third of the plant: the primary peduncle and its flower 2/5–9/10 the entire height of the plant: calyx with glabrous keels; its 2 broad lobes obtuse or merely subacute: corolla-lobes merely dentate, divergent: ovary sessile or subsessile .... *G. nesophila* Holm.
(Western Newfoundland and Anticosti and Mingan Islands, Quebec.)

Gray Herbarium.

Explanation of Plate 139.

Gentiana Victorinii, n. sp. Fig. 1, large plant, ×1/2; fig. 2, small plant, ×1/2; fig. 3, calyx laid open, ×1; fig. 4, corolla laid open to show stipitate ovary and naked filaments, ×1; fig. 5, fruit, ×1.

NOTES ON NEW ENGLAND HEPATICAE,—XVII.[1]

Alexander W. Evans.

(*Continued from page 83.*)

3. Bazzania denudata (Torr.) Trevis. Mem. Ist. Lomb. **13**: 414. 1877. *Mastigobryum denudatum* Torr., G. L. N. Syn. Hep. 216. 1845. *Jungermannia denudata* Torr. l. c., as synonym, not Nees. *Mastigobryum ambiguum* Lindenb. (in part) op. cit. 217. 1845. On rocks, more rarely on rotten logs. Maine: Greenville, *A. W. E.* (listed as *B. tricrenata* by the writer, Rhodora **14**: 17. 1912); Round Mountain Lake, Franklin County, and Jordan Mountain, Mt. Desert, *A. Lorenz.* New Hampshire; base of Mt. Washington, *J.*

[1] Contribution from the Osborn Botanical Laboratory.

A. Allen; Flume, *James Herbarium*; Gorham and Franconia, *T. P. James*; Thompson's Falls, White Mountains, *Underwood & Cook 19*; the "Pool" and Shelburne, *W. G. Farlow*, Mt. Willard, *E. Faxon*; Mt. Prospect, Plymouth, *A. J. Grout*; Waterville, *A. Lorenz*; Ice Gulch, Randolph, and Howker's Trail, Mt. Madison, *A. W. E.* Vermont: Bolton, *A. W. E.*; Lake Dunmore, Salisbury, and Willoughby, *A. Lorenz*; Granville Notch, *C. A. Weatherby*; Downer's Glen, Manchester, *A. J. Grout*; Brandon, *D. L. Dutton 1378, 1577*. Massachusetts: Plainfield (part of the original material of *M. denudatum* from the Hooker Herbarium, now in the Mitten Herbarium); Middlefield, 1822, *Emmons 120* (specimen in the herbarium of the New York Botanical Garden, labeled "*J. denudata* sp. nov."); Mt. Greylock, *A. L. Andrews* (listed as *B. triangularis* by the collector, Rhodora **6**: 74. 1904); Everett Brook, Sheffield, *A. Lorenz*; Alandar, Berkshire County, *A. R. Northrop*. Connecticut: Salisbury, Beacon Falls,[1] Naugatuck, and Redding, *A. W. E.* (listed as *B. tricrenata* by Evans & Nichols, Connecticut Geol. & Nat. Hist. Surv. **11**: 64. 1908). General reports of the species from Massachusetts and Connecticut have been published by the writer, the last reference including also a general report from Maine (Rhodora **5**: 171. 1903, as *B. triangularis*; **10**: 190. 1908, and **15**: 23. 1913, as *B. tricrenata*).

Outside New England the following stations may be noted:— Newfoundland: Channel, *Howe & Lang*; Placentia Bay, *A. E. Waghorne 21, 22*. Nova Scotia: Louisburg, Cape Breton, *J. Macoun 94, 108* (listed as *B. triangularis* by the collector, Cat. Canadian Pl. 7: 33. 1902); Port Clyde, *J. Macoun 49*; Purcell's Cove, Halifax Harbor, *Howe & Lang 1542*; near Indian Brook, mountains north of the Barrasois River, valley of the Barrasois, and Cape Dauphin, Cape Breton, *G. E. Nichols 512, 592, 1141, 1322*. New York, Catskill Mountains, *C. H. Peck* (listed as *Mastigobryum deflexum* by the collector, Ann. Rept. Reg. Univ. New York **19**: 70. 1866); Rocky Falls, North Elba, Essex County, *C. H. Peck* 37 (listed as *B. deflexa* by the collector, Bull. New York State Mus. **6**: 177. 1899); Little Falls, *C. F. Austin*; Clareyville, *C. H. Peck 4*; Chapel Pond Brook, Adirondack Mountains, *E. G. Britton*; Undercliff, Essex County, *C. C. Haynes 338*; Little Moose Lake, Herkimer County, *C. C. Haynes* (listed as *B. triangularis* by the collector, Bryologist

[1] A plant from this collection has been figured by the writer under the name *B. tricrenata*, Ann. Bot. **26**: 20. *f.* 27. 1912.

9: 62. 1906, and distributed as *B. tricrenata* [corrected label] in Am. Hep. *39*); East River Falls, above Lake Colden, and Lake Mohonk, *A. Lorenz.* Virginia: summit of White Top, 5678 ft. alt., *E. G. Britton 1*, J. *K. Small 52, 55, 56, 79* (listed as *B. deflexa* by Small & Vail, Mem. Torrey Club **4**: 193. 1894). West Virginia: Tibbs Run, Monongalia County, *C. F. Millspaugh* (listed as *B. deflexa* by the collector in Prelim. Fl. West Virginia 496); road to Cheat View, *E. M. Fling*; Spruce, Pocohontas County, *F. W. Gray 66*. North Carolina: Grandfather Mountain, *G. F. Atkinson 11579* (listed as *B. tricrenata* by Andrews, Bryologist **17**: 60. 1914—the other specimens cited here are all referable to the same species in his opinion); Roan Mountain, 6000 ft. alt., *A. L. Andrews 65.*

Soon after the publication of this species in the Synopsis Hepaticarum, Lindenberg and Gottsche[1] redescribed and figured it, but subsequent writers, with few exceptions, have considered its claims for recognition unfounded. As early as 1856 Sullivant[2] expressed the opinion that *M. denudatum* was probably a form of *M. deflexum*, and Austin,[3] in 1873, went one step farther by citing it as a simple synonym of *M. deflexum.* Most later students, especially in America, have followed Austin's examples. In 1888, however, Stephani[4] reported *M. denudatum* from Miquelon Island, south of Newfoundland, basing his record on specimens collected by E. Delamare and designating the species as peculiar to America. Pearson[5] cited this record two years later, under *Bazzania denudata*, but called attention to Austin's divergent views, and Macoun[6] repeated Pearson's citation in his last publication on Canadian hepaticology. Apparently Stephani afterwards changed his mind regarding *B. denudata*, since he makes no mention of it whatever in his monograph of the genus *Mastigobryum*, published in 1908, not even including it among the synonyms of his *M. triangulare.* In all probability he placed it in the same category as the forma "*implexa*," to which allusion has already been made. The fact that Trevisan recognized the species by forming the combination "*Bazzania denudata*" does not mean that he actually studied it. He merely transferred all the species of *Mastigobryum*, as given in the Synopsis, to the genus *Bazzania.*

[1] Spec. Hepat. Mastigobryum 7. *pl. 1, f. 1–4.* 1851.
[2] In Gray, Man. Bot. Ed. 2, 702. 1856.
[3] Hep. Bor.-Amer. *80.* 1873.
[4] In Delamare, Renauld & Cardot, Fl. Miquelonensis 66. 1888.
[5] List Canadian Hepat. 9. 1890.
[6] Cat. Canadian Pl. **7**: 33. 1902.

In its variability *B. denudata* is a close rival of *B. tricrenata*. It is perhaps advisable, therefore, to base our conception of the species on vigorous specimens, since these may be assumed to approach the typical condition more closely than delicate and poorly developed specimens. Even in well-developed material the plants grow in depressed mats, the individual stems being prostrate or slightly ascending but apparently never approaching a suberect position. The younger portions and sometimes the entire plants are green or yellowish green and do not show the brownish pigmentation of the cell-walls, which constitutes so striking a feature of *B. tricrenata*. In the older portions a dull brownish hue occasionally becomes apparent, but this seems to be associated with age and death rather than with an active process of pigmentation.

The stems, so far as the living portions are concerned, are mostly 1–1.5 cm. long and measure (with the leaves) 1–2 mm. in width. At irregular intervals branches of the *Frullania* type, diverging at a wide angle, are produced; while flagelliform branches, arising in the axils of the underleaves, are rare or abundant according to circumstances. Occasionally a flagelliform branch gradually becomes transformed into a leafy branch as it increases in length, and a leafy branch may sometimes spring directly from the axil of an underleaf, showing that the distinction between leafy and flagelliform branches is by no means stable. Rhizoids are sparingly produced; in most cases they grow out from the basal cells of the reduced leaves on the flagelliform branches, but in very rare cases may take their origin from the basal cells of ordinary underleaves.

The leaves are distant to somewhat imbricate. They spread widely, usually at a right angle, and lie in approximately the same plane. In most cases the leaves are flat but they are sometimes more or less convex when viewed from above. They vary in form from short-ovate to oblong-ovate, measuring in most cases 0.6–0.8 mm. in length by 0.4–0.6 mm. in width, and are slightly or not at all falcate. The upper margin is more or less arched from a scarcely rounded base, while the lower margin tends to be more nearly straight, in rare cases showing a vague basal expansion. The apices are so variable that it is difficult to determine what represents the most typical condition. In some cases the leaf tapers gradually to an acute or obtuse point, but it is much more usual for the apex to be broad and rounded or truncate. Under these circumstances there

may be no signs of apical teeth, and a long series of intermediate conditions may sometimes be found, even on a single individual, between this extreme and a three-toothed apex with sharp teeth separated by obtuse sinuses. The three-toothed condition, however, is rarely realized, most plants showing only one or two teeth, and these may be blunt or otherwise indistinct rather than acute. The leaf-cells average about 27 × 25 μ in the middle of the leaf; their walls are thin, and their trigones are small and often indistinct, usually with straight or slightly concave sides. The cuticle seems to be smooth throughout.

The underleaves are almost as variable as the leaves. They are distant to approximate and may be slightly imbricate in the vicinity of the shoot-apices. Sometimes they are subappressed, but it is much more usual for them to spread more or less widely from the axis. On well-developed plants they usually measure 0.2–0.3 in length and 0.3–0.45 mm. in width, the shape being broadly quadrate-orbicular. The base is almost straight and shows no indications of auricles; while the straight or slightly bulging sides are usually entire, although vague crenations or sharper teeth may be present in rare instances. The broad and truncate apex may show four rounded or obtuse teeth separated by distinct sinuses. In most cases, however, the teeth are fewer or lacking altogether, the apex then being entire or slightly emarginate.

Although the perianths of *B. denudata* are still unknown, female branches with unfertilized archegonia are not infrequent. Branches of this character were detected by Gottsche, who described the involucral leaves as ovate-cordate and crenulate at the apex with one or two teeth. Unfortunately the bracts and bracteoles of *B. tricrenata* and its allies do not attain their full size and development unless perianths and sporophytes are produced, so that Gottsche's account must not be accepted without reservations.

The most striking features of *B. denudata* are due to the production of caducous leaves and underleaves, and it is very unusual to find a patch of specimens in which this habit is not more or less in evidence. The throwing off of the leaves begins abruptly in most cases and then continues without interruption for a considerable period. Although in all probability the production of these leaves eventually brings the growth of the plant to an end, it is not unusual for an axis to fork two or three times after the caducous habit has been initiated.

Under such circumstances the forking and thread-like stems, tipped with rudimentary leaves but otherwise naked, except for the scanty vestiges left behind by the leaves and underleaves, present a very distinctive appearance. The caducous habit is sometimes more marked in the leaves than in the underleaves, and leafless stems with persistent underleaves are occasionally found. There are cases, too, where an axis recovers from the caducous habit and resumes its growth in a normal vegetative manner.

The caducous leaves are usually smaller than the ordinary leaves described above and may be reduced to a length of 0.2 mm. or even less, the caducous underleaves exhibiting a similar reduction in size. When a caducous leaf gives rise to a new stem the latter grows out directly, by a process of regeneration, from one of the leaf-cells, usually at or near the base. The stem elongates rapidly and produces a long series of minute leaves and underleaves, very similar to those on the flagelliform branches but somewhat firmer in texture and tending to spread more widely. Both leaves and underleaves are shortly bifid and essentially alike, the stem thus representing an almost radial structure and showing but little indication of the distinct dorsiventrality found in the normal leafy stems. The later stages in the development of these new stems have not been observed.

When typical plants of *B. tricrenata* and *B. denudata* are compared the differences between them are striking and have been brought out to a certain extent in the preceding account. In *B. tricrenata*, for example, the plants are more or less pigmented with brown, the stems tend to be suberect, the branches diverge at a narrow angle, and the persistent leaves are strongly convex; in *B. denudata*, on the contrary, the plants show no distinct brown pigmentation, the stems tend to be prostrate, the branches diverge at a wide angle, and the leaves are flat or only slightly convex and often caducous. When *B. denudata* is compared with "*Pleuroschisma tricrenatum* var. *implexum*" a closer approach is apparent, but in this latter plant the pigmentation is still present in a greater or less degree, the caducous habit is less marked and the caducous leaves themselves are less highly differentiated. It will be noted that "*Mastigobryum ambiguum* (in part)" is cited as one of the synonyms of *B. tricrenata*. This species was based on two specimens, as follows: "prov. Massachusetts (Asa Gray)" and "ad litora boreali-occidentalia (Hb. Hk.)." The first specimen has not been seen by the writer but there is little

doubt of its identity with *B. denudata*; the second specimen (according to a fragment in the Mitten Herbarium) represents a closely allied but apparently distinct species, widely distributed in the Pacific coast region from Alaska to Washington. This species, for which the specific name *ambiguum* may be retained, will be considered in another connection.

4. Scapania nemorosa (L.) Dumort. Recueil d'Obs. sur les Jung. 14. 1835. *Jungermannia nemorosa* L. Sp. Plant. 1132. 1753. *Scapania nemorosa* is one of the commonest and most widely distributed of the leafy Hepaticae in Europe and North America. It is abundant in all the New England States, its range extending from the sea level to an altitude of five thousand feet or more. Although it attains its best development on moist rocks, it grows also on drier rocks, on banks in the woods, in swamps, and even on old logs; and it is not surprising that it occurs in numerous forms. Some of these are very different in appearance from one another, and yet it is difficult to distinguish them clearly on account of the existence of intermediate and intergrading forms. Within recent years, however, the attempt has been made to segregate out certain forms as distinct species. Of these segregates the following three occur in New England, and their claims for recognition may therefore be briefly considered: *S. Joergensenii* Schiffn., *S. Austinii* Warnst., and *S. recurvifolia* Warnst.

The first of these segregates, *S. Joergensenii*,[1] was based on material collected by the Norwegian botanist, E. Jörgensen, in the Blaamanden Mountains, near Bergen, Norway, at an altitude of 450–500 m. When Müller[2] published his monograph of the genus *Scapania* he gave a full description of *S. Joergensenii*, with illustrations, still citing the original material only and emphasizing the close relationship of the plant to *S. nemorosa*. He has since reduced it to varietal rank under *S. nemorosa* and has listed additional specimens from Alsace, Baden, Bohemia, the Fichtel and Harz Mountains of Germany, and the Thuringian Forest.[3] He has noted its occurrence also in North America, without citing definite stations, but the writer is able to supply the following from the specimens in the Yale Herbarium: Mt. Clinton, Mt. Pleasant and Tuckerman's Ravine, White Moun-

[1] See Müller, Bull. Herb. Boiss. II. **1**: 607. 1901.
[2] Nova Acta Acad. Caes. Leop. Carol. **83**: 180. *pl. 23.* 1905.
[3] Rabenhorst's Kryptogamen-Flora **6**²: 503. 1915.

tains, New Hampshire, *A. W. E.*; Crawford Bridle Path, White Mountains, *G. E. Nichols.* These stations are all near or above the timber line. As Müller points out the deep purple color is the only important feature distinguishing *S. Joergensenii* from *S. nemorosa,* and this feature by itself seems insufficient to justify a specific separation,

The second segregate, *S. Austinii,*[1] was based on No. 18 of Austin's Hep. Bor.-Amer., distributed as "*Scapania nemorosa,* var. 3" and described as very common "in shady places, on rocks and on the ground," no definite localities being cited. This specimen is referred to *S. nemorosa* without question by Müller, but Warnstorf criticises him for doing so and compares his *S. Austinii* with *S. curta* (Mart.) Dumort., rather than with *S. nemorosa.* The plant under consideration is frequent in southern New England, where it grows on shaded banks in woods, and at first sight looks very different from the typical form of *S. nemorosa* on moist rocks. It is characterized, according to its author, by its smaller size, by the small number of teeth on the leaf-lobes, and by the absence of wings on the keels. In the writer's opinion these features are associated with unfavorable environmental conditions and *S. Austinii* represents a juvenile condition of *S. nemorosa,* in which certain pecularities of the species fail to manifest themselves. It may be added that inconspicuous keels are occasionally present and that the gemmae, which are abundantly produced, are yellow, pyriform or elliptical, and unicellular, thus agreeing with those of *S. nemorosa* rather than with those of *S. curta.* Warnstorf's species, therefore, should be regarded as a synonym of *S. nemorosa* or perhaps as a variety.

The third segregate, *S. recurvifolia,*[2] was based on another specimen distributed by Austin in his Hep.-Bor.-Amer. This specimen is No. 16 and was designated "*Scapania nemorosa* var. 1." It was described as common on the "margins of rivulets, swamps, &c.," and was likewise referred to *S. nemorosa* without question by Müller. Warnstorf admits the close relationship of his species to *S. nemorosa* but emphasizes, as differential characters, its recurved and entire dorsal leaf-lobes and its thin-walled leaf-cells with poorly developed trigones. Here again the distinctive features, even if they were constant, are very slight and appear to be associated in some way

[1] Hedwigia **63**: 79. 1921.
[2] Hedwigia **63**: 115. 1921.

with the environment. The writer, therefore, would regard *S. recurvifolia* as nothing more than a simple synonym of *S. nemorosa*. This conclusion is supported by the fact that the ventral leaf-lobes, as brought out by the description, are densely dentate and by the further fact that the gemmae are unicellular and conform closely to the *S. nemorosa* type.

In the same paper where Warnstorf described the last two segregates he reported the occurrence of the arctic *S. spitzbergensis* (Lindb.) K. Müll. in Connecticut, basing his record on a specimen collected by the writer at Branford. He intimated also that Müller's *S. nemorosa* forma *purpureolimbata*,[1] based primarily on a specimen collected by T. P. James at the Flume, New Hampshire, might be referable to the same species. The writer has examined these two specimens with care and finds that they lack the strongly convex dorsal lobes of *S. spitzbergensis* and also the coarsely toothed wings on the keels of the leaves; the keels in fact are almost invariably quite entire. There seems to be no reason, therefore, for separating these specimens from *S. nemorosa,* although they represent an unusually well-developed form. The only known American station for the true *S. spitzbergensis* is in Greenland.[2]

5. Lejeunea patens Lindb. Acta Soc. Sci. Fenn. **10**: 482. 1875. On trees and wet rocks. Pemetic Mountain trail, 600 ft. alt., Green Mountain Gorge, 800 ft. alt., and Southwest Harbor, 90 ft. alt., Mt. Desert. Maine, July, 1921, *A. Lorenz.* New to New England. In 1902 the writer[3] reported *L. patens* for the first time from North America, citing specimens from Newfoundland and Nova Scotia. It has since been collected in the mountains of North Carolina by Andrews.[4] In Europe it is one of the so-called "Atlantic" species, its known range extending along the coast from Norway to Ireland. It is closely related to *L. cavifolia* (Ehrh.) Lindb., so closely in fact that Müller and others regard it as a "small" species. At the same time it can usually be distinguished without difficulty. It differs, for example, in its paler color; in its more convex leaf-blades, spreading more abruptly from the lobules; in its smaller and more nearly orbicular underleaves; and in the crenulate margins of its leaf-lobes and underleaves.

[1] Rabenhorst's Kryptogamen-Flora 6^2: 504. 1915.
[2] See Evans, Bryologist **14**: 87. 1911.
[3] Mem. Torrey Club **8**: 160. 1902.
[4] See Bryologist **24**: 53. 1922.

The following additions to local state floras, not already mentioned in the preceding Notes, may be recorded:—

For Maine: *Riccia arvensis*, Belfast (*A. Lorenz*).

For Vermont: *Jungermannia cordifolia*, Hartland (*A. Lorenz*); *Scapania dentata*, Manchester (*W. R. Taylor*); *S. glaucocephala*, Pawlet (*W. R. Taylor*).

For Rhode Island: *Cephaloziella Hampeana* and *Lophozia Mildeana*, Westerly (*A. Lorenz*).

The census of New England Hepaticae now stands as follows: total number of species recorded, 196; number recorded from Maine, 151; from New Hampshire, 154, from Vermont, 137; from Massachusetts, 121; from Rhode Island, 81; from Connecticut, 146; from all six states, 66.

Yale University.

THE NORTHERN VARIETY OF GEUM VIRGINIANUM.

M. L. Fernald.

In 1774 Johan Andreas Murray separated from *Geum virginianum* L. a Canadian plant which he described as *G. laciniatum*,[1] distinguishing it by its more laciniate basal leaves, more incised and smaller stipules and strictly glabrous fruits, the more southern *G. virginianum* having the fruits pilose (setose). The foliage- and stipule-characters emphasized by Murray seem to be of no special importance, but it is significant that the great bulk of northern plants of *G. virginianum* have quite glabrous carpels, while all the southern specimens have them bristly. This is clearly shown in the occurrence in New England and adjacent areas; all the specimens from northern, eastern and central Maine and northern New Hampshire have glabrous fruits, although this smooth-fruited plant extends very locally southward into the range of the bristly-fruited plant in eastern and extreme western Massachusetts. All material examined from the Mohawk Valley and from western New York and Ontario likewise has glabrous fruits.

On the other hand, all the more southern material seen, from Missouri, Illinois, Pennsylvania and Connecticut and nearly all from Massachusetts, southern New Hampshire and southwestern Maine,

[1] J. A. Murr. Comm. Novi. Gott. v. 30, t. 2 (1774).

has the fruits definitely setose. It is thus clear that as geographic varieties the two are well defined. They show no other characters and cannot be maintained as species, but since the specific name used by Murray would be endlessly misleading if transferred to the varietal category to designate a plant distinguished only by its naked fruit it is proposed to call the smooth-fruited extreme

GEUM VIRGIANUM L., var. **Murrayanum**, n. nom. *G. laciniatum* Murr. Comm. Novi. Gott. v. 30, t. 2 (1774).—The following specimens belong here. NOVA SCOTIA: Sunny Brae, Pictou Co., *St. John*, no. 1425; Five-mile River, Hants Co., *Pease & Long*, no. 21,518; Middleton, Annapolis Co., *Bissell & Linder*, no. 21,519. MAINE: Fort Fairfield, Aroostook Co., *Fernald*; Orono, Penobscot Co., *Scribner et al.*; Dover, Piscataquis Co., *Fernald*; Pembroke, Washington Co., *Fernald*, no. 1925; Frankfort, Waldo Co., *Fernald & Long*, no. 13,830; East Auburn, Androscoggin Co., *Merrill*, no. 277. NEW HAMPSHIRE: Columbia, Coös Co., *Pease*, no. 10,414; Lancaster, Coös Co., *Pease*, no. 17,105; Alstead, Cheshire Co., *Noyes & Fernald* no. 365. MASSACHUSETTS: Cambridge, Middlesex Co., *C. E. Perkins*; vicinity of Boston, *Biltmore Herb.* no. 4977a; Rehoboth, Bristol Co., *Forbes*; Dartmouth, Bristol Co., *Hervey*; South Worthington, Hampshire Co., *Robinson*, no. 805. NEW YORK: Utica, Oneida Co., *Haberer*, no. 249; Yorkville, Oneida Co., *Haberer*, no. 249; Caroline, Tompkins Co., *MacDaniels*, no. 4315; Ithaca, *Thomas*, no. 2619. ONTARIO: North Hastings, Northumberland Co., *J. Macoun*, no. 528.

GRAY HERBARIUM.

JOSSELYN BOTANICAL SOCIETY.—The annual field meeting of the Josselyn Botanical Society of Maine was held at the Lowrie camps, Eastbrook, July 11–14, 1922. Eighteen members were present.

The region is one of small ponds and dry heaths and consequently with a limited flora. Two hundred and six species were collected in Eastbrook, the most interesting being *Carex Houghtonii* growing on dry roadsides. Mr. J. H. Emerton made valuable notes, collections and photographs of spruce spiders, abundant in this locality.

One day was spent in Gouldsboro, resulting in the finding of *Pinus Banksiana* near its southern limit. Here also were *Mertensia maritima, Euphrasia Randii, E. americana, Iris setosa*, var. *canadensis, Rubus Chamaemorus, Arethusa bulbosa, Arceuthobium pusillum, Gaylussacia dumosa, Arenaria peploides, Carex exilis, Elymus mollis* and *Scirpus cespitosus.*

The twenty-eighth Annual Meeting will be held at Kingfield, Franklin Co., Maine, July 9th to 13th inclusive. Kingfield is reached by the Maine Central to Farmington, thence by the Sandy River and Rangeley Lakes Railroad.—Lena Willis, Secretary, Naples, Maine.

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Drawn by Amelia Brackett.

Gentiana Victorinii, n. sp.

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Rhodora

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THE NEW ENGLAND BOTANICAL CLUB

Vol. 25. July, 1923. No. 295.

WILLIAM CONKLIN CUSICK

HAROLD ST. JOHN.

(With portrait.)

EASTERN OREGON is a region of high rugged mountains, sandy deserts, and deep hot river canyons. The settlers are few and scattered, yet the flora of this vast region is already well known. The tireless zeal of one man, both farmer and botanist, has accomplished this feat of exploration. He was William Conklin Cusick, and it is with sincere regret that his death is recorded.[1]

Mr. Cusick was born in Adams County, Illinois, on Februray 21st, 1842. He was named for his great grandfather on his father's side. His grandfather, Henry Cusick, a weaver by trade, left the north of Ireland for New York City, probably after the Revolutionary War.

Mr. Cusick's early boyhood was spent in Illinois, where he attended a country school, from the age of four to that of eleven. Then his parents, in 1853, joined the great westward surging tide of settlers. With an ox-team they crossed the "Oregon Trail." William was the eldest child, so, during a large part of this journey, he walked and drove the oxen. "We got to the south pass of the Rocky Mountains, which was then the eastern line of Oregon on the 4th of July. I remember seeing *Calochortus Nuttallii* growing among the sage brush in the valley of the Snake River." Ascending the Powder River they went near North Powder, where later Mr. Cusick took up a ranch. Crossing the dividing ridge they descended the valley of the Grande

[1] The writer wishes to acknowledge valuable assistance in the preparation of this biography from Mrs. S. F. Cusick, Mr. W. W. Eggleston, Mr. J. C. Nelson, and Dr. B. L. Robinson.

Ronde River past Union, where he spent his last days. From there they followed the "Oregon Trail" through the Blue Mountains to Walla Walla, then down the south bank of the Columbia River. They settled near Kingston, Linn County, Oregon.

In this new home, he continued his schooling. When he was 20 years old he went to the Lacreole Academy at Dallas in Polk County, where he continued his studies for a year and a half. Then for two years young Cusick himself taught school. The succeeding year he returned to the same academy. In 1864 he went to Willamette University where he was enrolled as a Junior. Here he studied mathematics, higher algebra, physics, and geology. After finishing this year at college, he enlisted as a volunteer in the Union Army. He was assigned to the Quartermaster Corps, and was stationed at Fort Lapwai, Idaho. Later he was transferred to a camp near Ukiah, Umatilla County, Oregon, and then to Camp Polk, near Sisters, Crook County, Oregon. "In '65 (summer of) I was 'soldiering' in those (Blue) Mt'ns and we found these onions (*A. Geyeri*) a valuable addition to our stock of 'Bacon + beans'." Mr. Cusick told the writer about this part of his life. There was little for a soldier to do at this isolated fort, and time hung heavy on his hands.

Through a friend in Portland, Oregon, he obtained a copy of Dr. Asa Gray's "First Lessons in Botany." "I . . . studied it pretty carefully one winter. Since then I have got most of Dr. Gray's works and the most I have learned from books I have got from them." This little book supplied the stimulus. By explaining their morphology it opened to him the study of the taxonomy of the hundreds of plants flowering on every side. He was one of that best type of botanists, the kind that is born, not made. When only eleven years old he had begun to notice the flowers, but at no time in his schooling did he have any instruction in botany. Born with the love of botany, his extensive knowledge of it was self-taught.

Obtaining his discharge from the army in 1866, he returned to western Oregon and settled near Salem. He again turned to teaching, but at the same time busied himself with market gardening.

In the fall of 1872, with his brother Frank, he returned to eastern Oregon. Together they acquired a ranch on the Powder River, where they lived and worked jointly. At this time, William began to pay more attention to his botanical work. As he wrote, "I did little in studying or collecting till coming to eastern Oregon in 1872.

I was so fortunate as to make the acquaintance of Dr. R. D. Nevius, and in the fall of 1880 Dr. S. Watson spent a few days at my cabin. I got much botanical information from these gentlemen." In 1887 the brothers sold this place and both moved to North Powder where they bought adjoining ranches. The two brothers still continued coöperating in the farm work. William's ranch, however, consisted largely of pasture land. Consequently he was able to leave his farm work and go on extended botanical trips.

His first lengthy trip was in 1885 when he went to Steins Mountains in Malheur County. The year 1886, he was able to devote the whole season to collecting. He gathered his specimens in sets of twelve and made arrangements to sell his duplicates. This proved to be profitable enough so that he followed this scheme almost every year afterwards. Following a period of several years when he was prevented from doing any extensive botanical work, he resumed this activity in 1896. In August of that year, with Prof. C. V. Piper, he made a collecting trip into the Wallowa Mountains. In 1897 he revisited Malheur County and pushed on to Harney County. In 1898 he revisited Steins Mountains, and continued as far as the Santa Rosa Mountains of Nevada. The next year, 1899, he explored the Seven Devil Mountains in western Idaho. In 1901, with his step-son Oscar, he explored the eastern and southeastern counties of Oregon. The following year, 1902, accompanied by his nephew R. G. Cusick, he worked the central part of the State, then the southwestern, as far down as the California line, and returned by Crater Lake. On returning from this trip he wrote, "Southwestern Oregon is certainly a very interesting region but I fear I cannot go there again. I think this is my last season of collecting to sell. There is not enough pay in it. Expenses are very heavy and after these are paid there isn't much left for me." This was his last long trip. On his first ones he went alone, but in later years his step-son, O. A. Cusick, or his nephew, R. G. Cusick, accompanied him.

Year after year, he explored and made collections from the Blue Mountains and the Wallowas. These trips, though often lasting several weeks, were usually made alone. He never carried fire arms or fishing tackle as he felt that when unmolested the wild animals would not trouble him, and that he was too busy with his botanical collecting to waste any time in fishing. He would load his botanical outfit and camping materials on a pony and start off into the most rugged mountains, or with a team of horses and a wagon into the

bleakest desert, and be gone for weeks at a time. He would reappear laden down with specimens, carefully selected and well prepared. During the winter he would identify them. Such as were too puzzling he referred to Dr. Watson, Dr. Greenman, Prof. Piper, and other specialists. On reading over the files of letters written to these botanists, one occasionally finds letters expressing irritation or indignation that this particular botanist had been slow in sending the list of determinations that Cusick had requested. Until they were named, he could not sell his specimens, so he was naturally anxious to receive the list of identifications. He probably did not realize how many others were asking similar favors of these busy people.

The worth of his work was abundantly recognized by other botanists. In 1908 Prof. M. E. Jones named a new genus of Umbelliferae, *Cusickia,* in his honor. Many species have been named *Cusickii,* after him, so many, in fact, that the writer has not attempted to compile a list of them.

Though thus active in supplying the material on which others paved important records, he was himself exceedingly modest in the matter of publication. So far as can be learned only two articles from his pen have a botanical bearing and both of these are short notes, namely: Forest Fires in Oregon, Bot. Gaz. viii. 176 (1883), and Ribes aureum, Bot. Gaz. xv, 24 (1890).

In 1913, he sold his own herbarium to the University of Oregon, at Eugene, Oregon. The greater part of this winter he spent at Eugene, working over his specimens for the University.

The next year he felt the lack of his herbarium so keenly that he started in again with the greatest energy to assemble a new one. In the fall of 1921 when the writer visited Mr. Cusick at Union, Oregon, his collection had grown to 3600 sheets, fully half of them being mounted. By this time he had had a stroke, and his eyesight had failed so that he could no longer work on his specimens. Consequently he sold these collections to the State College of Washington at Pullman, Washington. His sight and his strength had begun to fail, but his interest was as keen as ever. He told the writer with the greatest enthusiam of interesting regions that he was planning to visit. Together we talked of a future trip to the alpine slopes of Eagle Cap, or the rugged ravine of the Imnaha, though it was evident at the time that he would never make another long collecting trip.

He was married in October, 1892, to Mrs. Emma A. Alger, who died in February, 1894. When his wife died he was left with a mortgaged home and two children by her former marriage, Philip Alger aged 18, and Oscar, aged 9 years. He supported Philip at the Oregon Agricultural College till, when nearly ready to graduate, the young man left to be married. Young Oscar Alger, he adopted as Oscar Cusick. This younger boy was also sent to college, but he too left before graduating, to get married. It is not generally known, but it was these responsibilities which kept Mr. Cusick from doing more botanical work during this part of his life.

Mr. Cusick always took an active part in Church and in civic affairs. His neighbors knew that he went off on long trips to pick flowers, but they did not hold that against him. His modesty was so great that he seldom talked about this work, lest it should be interpreted as boasting. He would never allow any account of his life or work to appear in the local papers. It was very nearly the same with his family. Of course they knew how much time he spent on his work, but it seemed to them that he was just messing around with his specimens. The only indication they saw of the importance of his botanical work was the occasional visit from Dr. Watson or Prof. Piper or some government specialist from Washington, D. C., and they little realized that Mr. Cusick's name and work were known to scientists half way around the world.

Mr. Cusick died at his brother's home, Union, Oregon, October 7, 1922. He is survived by one brother, S. F. Cusick, of Union, Oregon; one sister, Mrs. S. E. Daley, of Scio, Oregon; and two half-sisters, Mrs. Hattie Dodd, of Middleton, Idaho; and Mrs. A. N. Busick, of Union, Oregon.

State College of Washington, Pullman, Wash.

NOTES ON THE DISTRIBUTION OF NAJAS IN NORTHEASTERN AMERICA.

M. L. Fernald.

In studying the four species of *Najas* which occur in the northeastern states and Canada so many discrepancies have been found between the published ranges and the occurrence of these plants as shown by specimens, that the following notes seem worth recording.

Najas marina L. (*N. major* All.). This widely dispersed species of brackish or fresh waters of tropical and temperate regions is rare in North America and in the Atlantic States is as yet known north of Florida only from central New York. From Morong's treatment[1] it would be inferred that the species is there confined to the northern end of Cayuga Lake and adjacent marshes, but there are other long-known stations. In 1864 the species "was discovered in Onondaga Lake, first by Judge G. W. Clinton, on the northern border of the lake (between Salina and Liverpool), and soon after by Mr. John A. Paine, Jr., on its western side."[2] In his *Catalogue*, Paine[3] gives a very detailed account of the Onondaga Lake stations. The plant is found in streams entering the lake; but "It abounds, however, in the lake, in water ten to twenty-five feet deep; most luxuriantly along the edge of a sudden descent of the bottom, at a distance from shore. When the water is clear and still, the plants can be seen growing on the bottom, branching in all directions from the root. But the best specimens come from the deepest water, out of sight." In 1912 Mrs. Goodrich[4] reported it also from Tulley Lake, Onondaga Co. In 1865 the second New York region for the species was discovered, in Irondequoit Bay of Lake Ontario. Material from this region was sent to Dr. Gray by C. M. Booth but in recording the discovery Gray[5] accredited it to E. J. Pickett. The stations about the northern end of Cayuga Lake are either in shallow water of marshes or in lake-water, while in Wayne County Peck found it in "Seneca river near Savannah."[6]

There are reports of the plant from Michigan and Minnesota but no material from the former region has been examined by the writer, although the Minnesota record (Lake Minnewaska, *B. C. Taylor*) is supported by good material; but, in view of the somewhat wide dispersal of *Najas marina* in the subsaline waters of central New York, it is certain that we should watch for it in similar habitats nearer the Atlantic coast. The probability of finding it along our coast is emphasized by the occurrence with it in or about Onondaga

[1] Morong, Mem. Torr. Bot. Cl. iii. No. 2: 58, 59 (1893).
[2] Gray, Am. Journ. Sci. ser. 2, xxxix. 107 (1865).
[3] J. A. Paine, Cat. Pl. Oneida Co. and Vic. 80 (1865).
[4] L. L. H. Goodrich, Fl. Onondaga Co. 30 (1912).
[5] Gray, Am. Journ. Sci. ser. 2, xli. 131 (1866).
[6] Peck, N. Y. State Mus. Nat. Hist. Ann. Rep. 1872, 88 (1874).

Lake of such maritime plants as *Zannichellia, Ruppia, Triglochin maritima, Diplachne maritima* Bicknell,[1] *Scirpus campestris*, var. *novae-angliae, Juncus Gerardi, Salicornia europaea, Chenopodium rubrum* and *Ranunculus Cymbalaria.*

N. FLEXILIS (Willd.) Rostk. & Schmidt. Morong's very sweeping assertion, that *N. flexilis* "is widely diffused in North America, being found in Canada, from the Atlantic to the Pacific, and equally common in the United States and Mexico. It is as widely distributed in the Old World,"[2] needs severe pruning on all sides. The writer has before him not only the material in the Gray Herbarium and the herbarium of the New England Botanical Club, but that of the Missouri Botanical Garden (because of Englemann's specia linterest in the genus) and of the University of Minnesota. In all this mass of material there are no clearly identifiable specimens from south of Maryland, Ohio, Indiana, Illnois and Iowa,[3] while to the west of Iowa and Minnesota the species seems to be only in Idaho, Oregon, Washington and British Columbia.[4] Instead of being "as widely distributed in the Old World," *Najas flexilis* is there one of the most localized of species, being confined to 3 areas in Ireland,[5] 1 or 2 in Scotland[6] and a few in the Baltic region.[7] In fact the great rarity and restricted range of *N. flexilis* in Europe and the discovery there of numerous fossil beds containing fruits of the species[8] have made this plant one of unusual interest in Europe since it seems there to be a localized survivor of the formerly wide-spread North American flora which has become so generally obsolete in Europe.

N. GUADALUPENSIS (Spreng.) Morong is of much wider range northward than has been supposed. Bicknell has recorded it from

[1] Bicknell, Bull. Torr. Bot. Cl. xxxv. 195 (1908).

[2] Morong, l. c. 60 (1893).

[3] Rendle cites a specimen from Missouri but all the Missouri plants I have examined seem to be *N. guadalupensis.*

[4] This isolation in the northwestern states or British Columbia suggests other ranges, for example, that of *Megalodonta Beckii* (Torr.) Greene (*Bidens Beckii* Torr.): Quebec and Nova Scotia to New Jersey, west to Missouri and eastern Manitoba, also in Washington; or *Potamogeton Robbinsii* Oakes: New Brunswick to Maryland, west to Indiana, Michigan and Ontario, and in northwestern Wyoming, Idaho, Oregon, Washington and southern British Columbia.

[5] Praeger, Irish Top. Bot. 330 (1901).

[6] Watson, Top. Bot. 425 (1883); Praeger, Tourist's Fl. W. Ireland, 198 (1909).

[7] See Rendle, Trans. Linn. Soc. ser. 2, Bot. v. 404 (1899).

[8] See Rendle l. c.

Nantucket,[1] Pennell collected it on Martha's Vineyard (No. 3486, distributed as "*Potamogeton foliosus* Raf. ?"), Fernald and Long got it on Block Island, Charles Wright had material which he left (now in herb. N. E. Bot. Cl.) marked simply "Connecticut," and St. John collected it in Suffolk Co., Long Island (no. 2541, distributed as *N. flexilis*). West of the Alleghenies it extends northward to the Great Lakes whence it follows eastward to Jefferson Co., New York (*Fernald, Wiegand & Eames*, no. 14,116) and in the St. Lawrence to Chambly Co., Quebec, (*Victorin*, nos. 8164, 11,347); and farther west it reaches Minnesota, Nebraska and Oregon. Nearly if not quite all the material from the southern states and Mexico which has passed as *N. flexilis* is apparently *N. guadalupensis*, which is readily distinguished in either pistillate flower or fruit, the style of *N. flexilis* being filiform and (including the stigmas) 0.8–2 mm. long, the stouter style (and stigmas) of *N. guadalupensis* only 0.1–0.6 mm. long. The seed of *N. flexilis* is highly lustrous and obscurely marked (under high power) with 30–40 rows of more or less hexagonal reticulations, that of *N. guadalupensis* is opaque and clearly marked with 15–18 rows of mostly rectangular areolae.

The plant of the Great Lakes and the St. Lawrence here referred to *N. guadalupensis* has long been a source of perplexity. Obviously not referable to *N. flexilis* on account of its wiry and somewhat turgid quality and the flat leaves, the plant has been specially puzzling because no one who has collected it—at Wolf Lake, Indiana, and in bays of Lake Erie as well as in the St. Lawrence near Longueuil—has secured fruit. In August, 1922, the plant was found by Fernald, Wiegand and Eames in comparatively deep water of Chaumont Bay, an arm of Lake Ontario in Jefferson Co., New York. There the puzzling plant contrasted sharply with *N. flexilis* in its stiff and diffusely bushy or broom-like aspect, its almost wiry stems and branches, and its short and flat rather fleshy leaves, and in a deep purple color which suffused the whole plant. Many sheets of specimens were collected, but in the whole series only a few very scattered fruits occur. These, however, are so exactly like those of characteristic specimens from subtropical and tropical America that there is no further question regarding the identity of the plant.

The scarcity of fruit on *N. guadalupensis* in the St. Lawrence basin is doubtless due to the fact that this essentially tropical species

[1] Bicknell, Bull. Torr. Bot. Cl. xxxv. 60 (1908).

is too far north for successful fruiting but, having reached the Great Lakes by way of the Mississippi Valley, it has been able to spread northeastward into the Province of Quebec by virtue of its freely rooting stems and branches.

N. GRACILLIMA (A. Br.) Morong is one of the most distinct species of the genus on account of its straight linear-setaceous leaf-blades strongly divergent from the conspicuously auricled and scarious sheathing base and its commonly subfalcate, very slender fruits with about 24 rows of longitudinal elongate areolae. Ever since the publication of Morong's *Najadaceae of North America* it has been customary to include "Missouri (Engelmann)."[1] in the range of the species. Considerable search has failed to reveal any statement by Engelmann that the plant is found in Missouri and in order further to check the matter the Engelmann material of *Najas* was borrowed, through the kindness of Dr. J. M. Greenman, and search through this abundant material fails to reveal any specimens from west of eastern New York, New Jersey and eastern Pennsylvania. The error may easily have arisen through one of those endlessly misleading labels which bear at the top in clear print the name of the owner and his address, while the really important data is written below in an obscure hand. Thus material in Engelman's herbarium has a label like this: In print at the top, "HERB. G. ENGELMANN, ST. LOUIS MO." and below written in Engelmann's most Germanic hand "*Najas Indica* var. *gracillima.* Lake Quinsigamond, Worcester, Mass., Aug. 11, 1880. Ex Hb. Gray, 1883." It was apparently this or a similar label which led to the now almost traditional statement that *N. gracillima* (*N. indica,* var. *gracillima* A. Br. in Engelm. in Gray, Man. ed. 5, 681) occurs in Missouri. As a matter of fact the species is peculiarly localized: in muddy, peaty or sandy ponds or pools from southern New Jersey and eastern Pennsylvania northeastward near the coast to Knox Co., Maine, and locally inland to Saratoga Co., New York, (shallow water of the Hudson, above Waterford, October 21, 1922, *H. K. Svenson*), southern Litchfield and Tolland Cos., Connecticut, Worcester, Middlesex and Essex Cos., Massachusetts and Kennebec Co., Maine (Cobossee Contee Lake, August, 1898, *T. J. Battey* in herb. N. E. Bot. Cl.).

GRAY HERBARIUM.

[1] Morong, Mem. Torr. Bot. Cl. iii. No.2: 61 (1893).

THE FORMS OF OSMORHIZA LONGISTYLIS.

S. F. Blake.

While collecting a few years ago at Cabin John, Montgomery County, Maryland, I became interested in the variation shown by the abundant specimens of sweet cicely (*Osmorhiza*) growing on a shady bank. In addition to *Osmorhiza claytoni* (Michx.) Clarke, at once recognizable by its short erect subulate styles and stylopodia, three other readily distinguishable forms occurred in about equal numbers, all with the long slender styles and stylopodia of *O. longistylis* (Torr.) DC. One of these was at once separable from all the other forms occurring by its perfectly glabrous stem. In the second the stem was densely puberulent with short spreading hairs about half a millimeter long, while in the third the stem was densely and canescently villous. Subsequent study has shown that the first of these forms, the one with glabrous stem, represents the typical *Osmorhiza longistylis* (Torr.) DC., which was described by Torrey[1] as with "stem . . . very smooth." The third was described by Professor Fernald some years ago as *Osmorhiza longistylis* var. *villicaulis*, with a range from Pennsylvania to Illinois and Kansas. The second form has never received a name.

The distinctive characters and ranges of these three variations of *Osmorhiza longistylis*, as shown by material in the National Herbarium, may be briefly stated as follows:

1. Osmorhiza longistylis (Torr.) DC. Prodr. **4**: 232. 1830 (typical form).

Myrrhis longistylis Torr. Fl. N. & M. U. S. **1**: 310. 1824.

Uraspermum aristatum β *longistyle* Kuntze, Rev. Gen. Pl. **1**: 270. 1891.

Washingtonia longistylis Britton in Britton & Brown, Ill. Fl. **2**: 530. 1897.

Stem glabrous, or slightly pubescent at the nodes.

Type locality: New York.

Distribution: "Eastern Quebec to Assiniboia, south to North Carolina, Alabama, Kansas and Colorado." Common in the District of Columbia.

2. Osmorhiza longistylis var. **brachycoma** Blake, var. nov.

Stem, petioles, and at least the lower part of branches densely puberulent with spreading hairs 0.3 to 0.8 (averaging 0.5) mm. long.

[1] Fl. N. & Mid. U. S. **1**: 310. 1824.

TYPE in the U. S. National Herbarium, no. 989634, collected on slope in woods, Cabin John, Montgomery County, Maryland, 26 May 1918, by S. F. Blake (no. 6902). Duplicate in the Gray Herbarium.

OTHER SPECIMENS EXAMINED: ONTARIO: Kingston, 1895, *J. Fowler*. NEW YORK: Vicinity of North Harpersfield, Delaware County, 1906, *D. LeR. Topping* 166. PENNSYLVANIA: *J. Hoopes*. MARYLAND: Cabin John, 1908, *E. S. Steele*; Plummer's Island, 1915, *P. C. Standley* 11451. DISTRICT OF COLUMBIA: Banks of Canal, 1895, *C. L. Pollard* 177; High Island, 1895, *Pollard* 252; between Potomac River and Canal, Georgetown to Plummer's Island, 1899, *E. L. Morris* 41. OHIO: Niles, 1891, *R. H. Ingraham*.

3. OSMORHIZA LONGISTYLIS var. VILLICAULIS Fernald, RHODORA **10**: 52. 1908.

Washingtonia longistylis villicaulis Coult. & Rose, Contr. U. S. Nat. Herb. **12**: 443. 1909.

Stem, petioles, and at least the lower part of the branches densely villous with spreading hairs 1 to 2 mm. long.

TYPE LOCALITY: On the Conestoga near Binkley's Bridge, Lancaster County, Pennsylvania. Type collected by A. A. Heller, 21 June 1901, in Gray Herbarium; duplicate in U. S. National Herbarium.

DISTRIBUTION: Pennsylvania to Minnesota and Nebraska, south to Maryland, Missouri, and Oklahoma.

This seems to be as common in the District of Columbia and vicinity as the typical form.

BUREAU OF PLANT INDUSTRY, WASHINGTON, D. C.

BAFFIN LAND PLANTS COLLECTED BY THE MACMILLAN EXPEDITION, 1922.

M. L. FERNALD.

DURING MacMillan's last expedition to Baffin Land a small collection of vascular plants was made by Mr. MacMillan's chief assistant, Mr. Ralph Robinson. Although the collection consists chiefly of widespread arctic types and contains only a few species not already recorded[1] from eastern Baffin Land, it seems desirable, since there are so few records from southwestern Baffin Land, to

[1]For instance in J. D. Hooker's *Account of the Plants collected in Greenland and Arctic American during the Expedition of Sir Francis M'Clintock*.—Journ. Linn. Soc., Bot. v. 79–88 (1861); and James Taylor's *Notice of Flowering Plants and Ferns collected on both sides of Davis Straits and Baffin's Bay*.—Trans. Bot. Soc. Edinb. vii. 323–334 (1863).

enumerate the entire collection. The plants were collected chiefly at Bowdoin Harbor. Dates of flowering or fruiting and any other notes of special significance are appended.

List of Plants from Southwestern Baffin Land, Collected in 1922 by Ralph Robinson.

Cystopteris fragilis (L.) Bernh. Bowdoin Harbor, no. 38.

Thelypteris fragrans (L.) Nieuwl. Top of North Cliff, Bowdoin Harbor, *fruit* July 15, no. 25.

Lycopodium Selago L. Cannon Inlet, no. 64.

Arctagrostis latifolia (R. Br.) Griseb. Shore of Cairn Lake, *flowers* July 29, no. 44 in part.

Poa abbreviata R. Br. Shore of Cairn Lake, *flowers* July 29, no. 44, in part.

Elymus arenarius L., var. villosus Meyer. *E. mollis* Trin. Bowdoin Harbor, no. 18; Cape Dorset, *flowers* August 5, no. 58.

Carex compacta R. Br. Shore of Cairn Lake, *fruit* July 29, no. 45, in part.

Eriophorum callitrix Cham., not Anderss. Cape Dorset, *fruit* August 8, no. 56.

Luzula confusa Lindeberg. Shore of Cairn Lake, *fruit* July 29, no. 45, in part.

Salix anglorum Cham. Bowdoin Harbor, *aments showing*, May 18, *flowers and foliage*, June 4, no. 1 in part; *fruit*, July 29, no. 48.

S. calcicola Fernald & Wiegand. Bowdoin Harbor, *flowers* June 4, no. 1, in part. The first collection from north of Labrador.

S. reticulata L. Bowdoin Harbor, *flowers*, July 29, nos. 46, 47.

Oxyria digyna (L.) Hill. Bowdoin Harbor, *flowers* July 18, no. 20.

Polygonum viviparum L. Seal Harbor, *flowers* July 19, no. 34; Cairn Lake, *flowers* July 29, no. 43.

Cerastium alpinum L. Bowdoin Harbor, *flowers* July 10, no. 21.

Stellaria longipes Goldie, var. Edwardsii (R. Br.) Watson. Cape Dorset, *flowers* August 5, no. 57.

Lychnis apetala L. Northwest Cape, Bowdoin Harbor, *flowers* July 14, no. 29.

Silene acaulis L., var. exscapa (All.) DC. Bowdoin Harbor, *flowers* July 8, no. 11.

Ranunculus pygmaeus Wahlenb. Shore, Cairn Lake, *fruit* July 30; Cape Dorset, *flowers* August 6, no. 61.

Ranunculus pedatifidus J. E. Sm., var. leiocarpus (Trauttv.) Fernald. *R. affinis* R. Br. Northwest Cape, Bowdoin Harbor, *flowers* June 16 and 27, nos. 6, 8.

Draba alpina L. Canoe Cove, Bowdoin Harbor, *flowers* June 27, no. 7; Northwest Cape, Bowdoin Harbor, July 14, no. 28.

D. fladnizensis Wulfen. Bowdoin Harbor, *flowers* July 8, no. 9.

Eutrema Edwardsii R. Br. Bowdoin Harbor, *flowers* June 6 and July 21, nos. 5, 39.

Arabis alpina L. Cannon Inlet, *flowers* August 9, no. 66.

Papaver radicatum Rottb. Bowdoin Harbor, *flowers* July 15, no. 23.

Saxifraga Hirculus L. Northwest Cape, Bowdoin Harbor, *flowers* July 14, no. 30.

S. nivalis L. Seal Harbor, *flowers* July 26, no. 41.

S. cernua L. Tommy's Lake, *flowers* July 31, no. 51.

S. cespitosa L. Bowdoin Harbor, *flowers* July 10 and 14, nos. 17, 27.

S. tricuspidata Retz. Bowdoin Harbor, *flowers* July 10, no. 22.

S. oppositifolia L. Bowdoin Harbor, *flowers* July 4, no. 3.

Chrysosplenium alternifolium L., var. tetrandrum Lund. Shore, Cairn Lake, *flowers* July 28, no. 42.

Potentilla emarginata Pursh. Bowdoin Harbor, *flowers* July 8, no. 13.

P. fragiformis Vahl. Cape Dorset, *fruit* August 5, no. 55. The material is apparently inseparable from the Alaskan and Siberian plant.

Dryas integrifolia Vahl. Bowdoin Harbor, *flowers* July 8, no. 10.

Astragalus alpinus L. Bowdoin Harbor, *flowers* July 10, no. 15.

Oxytropis campestris (L.) DC., var. melancocephala Hook. Bowdoin Harbor, *flowers* July 10, no. 14.

O. arctiloba Bunge. Bowdoin Harbor, *flowers* July 8, no. 12; Cape Dorset, *fruit* August 6, no. 59. For discussion of this species see Ostenfeld, Vasc. Pl. Arct. N. Am. 19 (1910). These seem to be the first collections of this handsome species from east of Mellville Island and Victoria Land.

Epilobium latifolium L. Bowdoin Harbor, *flowers* July 21, no. 40.

PYROLA GRANDIFLORA Radius. Cape Dorset, *flowers* August 6, no. 60.

LEDUM PALUSTRE L., var. DECUMBENS Ait. Cannon Inlet, *flowers* August 9, no. 63.

RHODODENDRON LAPPONICUM Wahl. Bowdoin Harbor, *flowers* July 16, no. 32.

CASSIOPE TETRAGONA (L.) Don. Bowdoin Harbor, *flowers* July 16, no. 31.

VACCINIUM ULIGINOSUM L., var. ALPINUM Bigel. See Fernald, RHODORA xxv. 24 (1923). Bowdoin Harbor, *flowers* July 15.

VACCINIUM VITIS-IDAEA L., var. MINUS Lodd. Bowdoin Harbor.

STATICE LABRADORICA (Wallr.) Hubbard & Blake. Bowdoin Harbor, *young flowers* July 10, no. 19; Cannon Inlet, *flowers* August 9, no. 65.

MERTENSIA MARITIMA (L.) Don. Bowdoin Harbor, *flowers* July 10, no. 16.

PEDICULARIS CAPITATA Adams. Bowdoin and Seal Harbors, *flowers* July 19, no. 35. A notable southern extension, the nearest stations being, apparently, in Ellesmereland and on the Boothia Peninsula.

P. FLAMMEA L. Bowdoin Harbor, *flowers* July 21, no. 36.

P. HIRSUTA L. North Cape, Bowdoin Harbor, *flowers* July 14, no. 4A.

P. LANATA Cham. & Schlecht. Bowdoin Harbor, *flowers* June 15, no. 4.

CAMPANULA UNIFLORA L. Seal Harbor, *flowers* July 18, no. 33.

ERIGERON UNIFLORUS L. Northwest Cape, Bowdoin Harbor, *flowers* July 14, no. 26.

ANTENNARIA ALPINA (L.) Gaertn., var. CANESCENS Lange. Seal Harbor, *flowers* July 31, no. 52.

MATRICARIA GRANDIFLORA (Hook.) Britton. Queen's Cape, *flowers* July 31, no. 53.

CHRYSANTHEMUM INTEGRIFOLIUM Richardson. Cape Dorset, *flowers* August 6, no. 62. This and Dr. Robert Bell's station on Nottingham Island in Hudson Strait are far to the southeast of the former eastern limit, on the Boothia Peninsula.

TARAXACUM LYRATUM (Led.) DC. *T. phymatocarpum* Vahl. Seal Harbor, *flowers* July 22, no. 37. A decided southern extension in eastern America, from Ellesmereland and Melleville Island.

GRAY HERBARIUM.

The Identity of Carex gynandra Schwein.—What must be regarded as the type material of *C. gynandra* is preserved on a sheet from Schweinitz's own herbarium, now at the Philadelphia Academy of Natural Sciences, labelled in Schweinitz's hand "Carex gynandra N[obis] Salem, N. C." This sheet contains the tops of five culms, all without bases, and evidently from three different plants. Culm 1 bears four very short pistillate spikes, 1.75–2.5 cm. long and about 5 mm. thick. The scales are nearly or quite awnless and gradually narrowed at the tip, and scarcely, if at all, exceed the perigynia. The latter are in excellent mature condition and perfectly representative of the form generally passing under the name *gynandra*. Culms 2 and 3 are alike. Their pistillate spikes are proportionally more slender than those of no. 1, 4 mm. thick, exclusive of awns, and 2.3–4 cm. long. The scales are abruptly contracted into short awns. The young perigynia are smooth, relatively broad, and rounded at the apex. These specimens appear to me to be at least as well referable to typical *C. crinita* as to var. *gynandra*. Culms 4 and 5 are again alike. The spikes are longer, 3.5–5 cm. long, the scales short-awned, and the young perigynia distinctly granular-roughened (though not nerved), suggesting at least an approach to *C. Mitchelliana* M. A. Curtis (cf. Rhodora xxv. 17 (1923).)

It is evident, then, that either Schweinitz or someone who arranged his herbarium after his death included in *C. gynandra* three more or less different elements. This is made still plainer by another speciman at the Philadelphia Academy labelled, in a hand which neither Mr. Bayard Long nor I recognized, as coming from "herb. Schw[einitz] sub nom[ine] gynandra—4th series." This specimen is, except for its short scales, very good *C. crinita*. Such confusion is readily explicable when it is recalled that Schweinitz in his original diagnosis distinguished *C. gynandra* solely by its short scales and was followed by Torrey in his earlier work.

Which of the three elements represented on the type sheet of *C. gynandra* should bear that name, in the present-day understanding of the group? Culms 2 and 3, if properly referred to typical *C. crinita*, are accounted for there. Culms 4 and 5 are referable, with slight doubt, to *C. Mitchelliana* and are similarly disposed of there. All are so immature as to make their determination somewhat uncertain. About culm 1, however, there is no possible doubt; it is in excellent condition and, though stunted, otherwise represents perfectly

the common plant to which the name *gynandra* is, and long has been generally applied. The reasonable course is to retain Schweinitz's name for that plant. That this is the proper procedure is further indicated by the fact that the specimen of *C. gynandra* sent by Schweinitz to Torrey and now at the New York Botanical Garden, which Mr. K. K. Mackenzie has kindly examined for me, proves also to be *C. gynandra* in the accepted sense.—C. A. Weatherby, Gray Herbarium.

Notes on two Ericaceae of the Boston District Flora.—Rhododendron nudiflorum (L.) Torr.—Only a single locality (Purgatory Swamp) for this pink azalea is given[1] in the Flora of the Boston District. I have collected flowering specimens in rather moist woods at Stoughton Junction, 29 May 1909, and in dry woods at Westwood or vicinity, 27 May 1911. A portion of the first collection has been deposited in the herbarium of the New England Botanical Club.

Vaccinium vacillans Kalm[2] var. crinitum Fernald.—This variety, distinguished by the pubescent twigs and under leaf surface, is not listed in the Flora. Specimens in young fruit were collected in gravelly soil in Stoughton on 15 June 1912 (*Blake* 3672) and on a gravelly bank in Stoughton on 16 June 1912 (3691). A specimen of the first collection has been placed in the New England Botanical Club herbarium.—S. F. Blake, Bureau of Plant Industry, Washington, D. C.

[1] Rhodora **24**: 155. 1922.

[2] In Rhodora **16**: 117, footnote 4 (1914), I stated that this specific name should be accredited to Torrey, not to Kalm. Although, as has been shown by Britten (Journ. Bot. **42**: 55. 1904), Solander and not Kalm was the real namer of the plant, the fact that Torrey (Fl. N. Y. **1**: 444. 1843) published the description of the new species under the heading "Vaccinium vaccillans, Kalm" makes it necessary to cite the name as *V. vacillans* Kalm ex Torr.

The date of the June issue, unpublished as this goes to press, will be announced later.

Farlow Bot Lab

Rhodora

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Yours faithfully
T. L. Goodale

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 25. August, 1923. No. 296.

GEORGE LINCOLN GOODALE.

L. H. Bailey.

(With portrait.)

George Lincoln Goodale began life August 3, 1839 at Saco, Maine, and completed it April 12, 1923, at Cambridge, Massachusetts.

This bare statement may seem to signify little, but the life that was lived in those eighty-four years has great significance to a wide circle of associates and acquaintances and to the teaching of botany. To those who knew Dr. Goodale in his active teaching days at Harvard there remains a memory of a prompt, upstanding, positive, accomplishing character, master of his subject, unhesitating and convincing in his presentation of it. He succeeded to the teaching work of Asa Gray. It was a great career to follow. He continued the work without a personal departure and with rare loyalty at the same time that he gave it a particular direction.

Dr. Goodale's teaching naturally covered a wide range, but his was the special opportunity to present the enlarging subject of plant physiology as it was developed and understood by the best men of the day. He had good academic and scientific preparation. He had an acquisitive and analytic mind. He knew the necessary languages. He had personal acquaintance with the men and the laboratories in Europe. He brought this accumulation and experience to students in America in an authoritative way at a time when it was much needed. It was at length embodied in his Physiological Botany, 1885, comprising the second volume of Gray's projected "Botanical Text-Book," the third and fourth volumes of which, to be devoted to other subjects, were unhappily never completed.

One cannot go back to this text-book without being impressed by its thoroughness, the familiarity with the literature of the epoch as evidenced in the abundant citations, and by the logical, coherent, straightforward presentation. It stresses the chemical and physical relations of the subject. It is divided into two parts,—The Outlines of Vegetable Histology, and Vegetable Physiology, the second comprising about two-fifths of the treatment. It is a solid substantial book, that students of the present day would do well to understand.

But Dr. Goodale was interested not alone in precise laboratory studies. His "Wild Flowers of America," with colored plates from the drawings of Isaac Sprague, 1882, is still one of our choicest books for the plant-lover. Even as early as 1868 he had collaborated with Joseph Blake in the preparation of the "Portland Catalogue of Maine Plants." He was keenly interested in economic botany and in the practical improvement of useful and industrial plants, as well as in materia medica, to which his early studies and medical practice naturally led him. His presidential address before the American Association for the Advancement of Science at the Washington meeting, 1891, was on "Useful Plants of the Future." His interest in popular presentation of botanical subjects found expression also in the great Ware collection of Blaschka glass-models of plants in flower, which he was instrumental in securing and to the preparation of which he gave much personal attention, beginning as early as 1886; this unique collection is now one of the striking features of the Harvard Museums.

The breadth of his training and preparation is attested by the professional work in which he was engaged before he devoted himself to botany at Harvard. He practised medicine in Portland, Maine, 1863–66, having received M. D. from Bowdoin and Harvard in 1863; was state assayer of Maine, 1864; professor in natural science at Bowdoin, 1867–73, covering applied chemistry from 1868, and materia medica from 1870.

Dr. Goodale's active connection with Harvard began in 1872, as lecturer on vegetable physiology and instructor in botany. In 1873 he became assistant professor in vegetable physiology; in 1878 he was made full professor of botany; from 1879–1909 he was director of the botanic garden and curator of the botanical museum. From 1888 to 1909 he was Fisher Professor of Natural History at Harvard, the title previously held by Gray, and in 1909, on his retirement, was

made Fisher Professor Emeritus. In 1890–91 he visited Ceylon, Java, Straits Settlements, Australia, and Japan, adding greatly to his rich accumulation of botanical knowledge. His later years were lived quietly in Cambridge.

His work was well known outside of Harvard University. In 1890 he received the degree of LL.D. from Amherst College, where he had taken his baccalaureate degree in 1860 and from which he received A. M. in 1866; in 1894 from Bowdoin; in 1896 from Princeton. In 1889 he was vice-president of the Biological Section of the American Association for the Advancement of Science, and 1890–91 president of the Association. He was a fellow of the American Academy of Arts and Sciences, member of the American Philosophical Society, National Academy of Sciences; honorary fellow of the New York Academy of Sciences and of the Royal Society of New Zealand; at one time he was associate editor of the American Journal of Science, and was in attendance at the International Botanical Congress at Brussels in 1910; he held membership in the various botanical societies.

Dr. Goodale came of a distinguished father. Stephen Lincoln Goodale (1815–1897) succeeded to the drug business of his father, and early became interested in the chemical and botanical phases of pharmacy; this interest he extended to horticulture and crop-production, and he developed what was then the best growing collection of fruits and ornamental plants in Maine. From 1856–1872 he was secretary of the Maine State Board of Agriculture, editing sixteen volumes of reports which are well known to this day for their excellence. In 1861 he published "The Principles of Breeding," which is an able discussion of the physiological laws involved in the reproduction and improvement of domestic animals, and was long a leading presentation of the subject. He became interested in the manufacture and use of commercial fertilizers, and with Gail Borden started a factory as early as 1863 for the manufacture of condensed milk. He also was concerned in the manufacture of beef extract by the Liebig process. He was once a trustee of the State College of Agriculture and Mechanic Arts, now the University of Maine. His correspondence was extensive with scientific men in this country and abroad.

George Lincoln Goodale married Henrietta Juel Hobson in 1866, who survives him, as do his two sons, Dr. Joseph Lincoln Goodale, Boston, and Francis G. Goodale of Weston, Massachusetts, as well

as a brother, Dr. Walter Temple Goodale, Saco, Maine. The funeral services were held at St. John's Memorial Chapel, April 14, 1923, Dean Washburn of the Episcopal Theological School officiating. The pall-bearers were President Emeritus Charles W. Eliot, President A. Lawrence Lowell, Dr. Henry P. Walcott, Professor Oakes Ames, Edwin Abbott, Samuel Henshaw, Walter Deane, H. Clifford Gallagher, Dr. Robert T. Jackson, Professor W. J. V. Osterhout, Professor Roland Thaxter. The remains were taken to Saco, Maine, there at last to rest with the long family associations.

CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD UNIVERSITY.

New Series.—No. LXIX.

A. Brackett.

I. REVISION OF THE AMERICAN SPECIES OF HYPOXIS.

The genus *Hypoxis* occurs mostly in the southern hemisphere, extending into the northern hemisphere in subtropical Asia and by way of Mexico and the Antilles to the Atlantic slope of North America. All of our species have corms accompanied by somewhat fleshy root-fibers. They are herbs with grass-like, linear-lanceolate to nearly filiform and generally pilose leaves. The scapes are simple, one- to several-flowered. The peduncles are in general slightly pilose especially above, often glabrescent below. The pedicels are generally quite short; the bracts (when present) are setaceous and generally shorter than the pedicels. The ovary and capsule, commonly rather pilose when young, become nearly glabrous at maturity. The perianth-segments are narrowly elliptic, glabrous, yellow or white within, green and pilose without. The capsule is subglobose to subcylindric, generally three-lobed. The anthers of the American species are usually versatile but in one species, *H. sessilis* L., they are basi-fixed. The seeds are small, dark-colored, subglobose, muricate, bearing a beak and rostrate hilum.

In his *Synopsis of Hypoxidaceae*, Baker[1] recognized only three species of *Hypoxis* in all America, *H. juncea* Smith, *H. erecta* L. = *H. hirsuta* (L.) Coville and *H. decumbens* L. These were placed

[1] J. G. Baker, Journ. Linn. Soc. xvii. 93–126 (1878).

in his subgenus *Euhypoxis,* characterized by versatile anthers, while the species with basifixed anthers (and glabrous foliage) constituted his subgenus *Ianthe* of Australia and the Cape of Good Hope. *H. sessilis* of the Atlantic coastal plain is, therefore, of special interest since it has the pilose leaves and perianth of *Euhypoxis* but the basifixed anthers of *Ianthe.*

Baker's reduction of all the species in North and South America to three was natural because he was working with only the superficial characters. In attempting to place satisfactorily material of *H. sessilis* (the American species with basifixed anthers, not generally recognized since its publication by Linnaeus), it was found that the species of the United States are clearly separated by their seeds. The seed-characters proved so satisfactory, in this limited area, that the study was extended to cover the plants of the West Indies, Mexico, Central and South America. In carrying on this work I have examined the material in the Gray Herbarium and have been generously loaned the American specimens in the herbaria of the New York Botanical Garden, the Academy of Sciences of Philadelphia, the United States National Museum and the Missouri Botanical Garden. I wish here to express my thanks for the use of this material to those in charge of the different collections: Professors Robinson and Britton and Doctors Pennell, Maxon and Greenman. Throughout the work I have had the constant suggestions and aid of Professor Fernald and much aid in the bibliography from Miss Day and Miss Vincent of the Gray Herbarium library.

I have made critical studies of all the fruiting material available. The seed-characters of the plants from south of the United States prove as satisfactory as was hoped and, supported by other characters, indicate that there are at least fifteen, instead of only three American species. The regions in America where *Hypoxis* seems to have the greatest variety of species are the southeastern and Gulf coastal plain of the United States (from South Carolina to Texas), the upland of Mexico and the northern Andes. It is probable that South America will furnish more species than are here treated: the material seen from that region has been very scanty and at least two of the South American species described by Humboldt, Bonpland and Kunth have not been satisfactorily matched, and new species are likely to be discovered.

The results of this study are embodied in the following key to and synopsis of the American species. In the drawings I have shown the habit (× ½) and the seed (approximately × 40) of each species.

Key to Species

A. Mature seeds black B.
- B. Leaves linear-filiform, canaliculate or involute, less than 1 mm. broad; seeds with truncated, irregularly carved murications .... *1. H. juncea.*
- B. Leaves linear to lanceolate, broader; seeds muricate, papillose or with rounded pebbling C.
  - C. Sheaths not usually disintegrating into bristles at the base D.
    - D. Seeds covered with numerous, closely crowded, spine-like murications, lustrous E.
      - E. Leaves 1–8 mm. broad, stiff and loosely ascending; peduncles stiffish, usually 2–7-flowered; mature ovary loosely and densely villous; seeds with murications sharp-pointed .... *2. H. hirsuta.*
      - E. Leaves 3.5–12 mm. broad, very thin and flaccid; peduncles capillary and lax, 1–3(rarely 4)-flowered; mature capsule slightly pubescent to glabrate; seeds with bluntish murications coarser than in typical *H. hirsuta* .... *2a. H. hirsuta*, var. *leptocarpa.*
    - D. Seeds covered with often nearly confluent, low, rounded pebbling, generally not lustrous; leaves flaccid F.
      - F. Scapes 1–4-flowered .... *3. H. decumbens.*
      - F. Scapes generally 4–8-flowered; larger form, usually more pilose .... *3a. H. decumbens*, var. *major.*
  - C. Sheaths disintegrating into fibers G.
    - G. Leaves rather stiff and pilose; fibers forming generally rather dense tufts; scapes 1–2-flowered; the pedicels shorter than the flowers; seeds covered with low, rounded, closely approximate pebbling .... *4. H. rigida.*
    - G. Leaves flaccid, becoming only slightly fibrillous; scapes 2–4-flowered; the pedicels much exceeding the flowers; seeds papillose, bearing irregularly elongate, obtuse papillae .... *5. H. tepicensis.*

A. Mature seeds brown or drab (black only underlying the outer coat and about the beak and rostrate hilum), sometimes showing iridescence H.
- H. Seeds iridescent I.
  - I. Anthers nearly basifixed; the basal lobes short and rounded; leaves linear-lanceolate, not distinctly narrowed at the base; flowers solitary, often nearly sessile; seeds with gold or blue colors predominating. *6. H. sessilis.*
  - I. Anthers versatile; the basal lobes longer, tapering at the ends; leaves linear-lanceolate, narrowed almost to petioles near the base; scapes 1–2-flowered; seeds black beneath the exfoliating outer coat which clings as remnants about the flat pebbling and shows flecks of iridescence .... *7. H. breviscapa*
- H. Seeds not iridescent or rarely with slight iridescent fleckings J.
  - J. Seeds rarely showing any black except at beak or hilum K.

K. Seeds minutely muricate, beak nearly obsolete; basal sheaths membranous, often thick and dark, rarely becoming fibrillous; scapes 1–few-flowered . . *8. H. micrantha.*

K. Seeds more coarsely muricate; beak well developed L.

L. Beak and hilum set in a lustrous, black, wedge-shaped spot; murications stiff, conical and sharp-pointed; basal sheaths becoming quite fibrous. *9. H. potosina.*

L. Beak and hilum not set in a lustrous, wedge-shaped spot M.

M. Seeds covered with low, blunt, corrugated pebbling; basal sheaths membranaceous, generally becoming fibrillous . . . . *10. H. Wrightii.*

M. Seeds covered with spine-like or subulate processes N.

N. Outer coat of loose texture, wrinkled and pinched into scarcely confluent, little peaks, persistent; basal sheaths becoming fibrous. *11. H. rugosperma.*

N. Outer coat of firmer texture, covered with sharp or obtuse spine-like processes O.

O. Basal sheaths disintegrating into dense fibers; seeds with firm conical, obtuse, scarcely confluent processes . . . . *12. H. fibrata.*

O. Basal sheaths becoming somewhat fibrillous; seeds darker, with firm, sharp-pointed, rather crowded processes, the sides of which seem to be grooved or lined . . . . *13. H. humilis.*

J. Seeds generally showing much of the black under coat P.

P. Murications rather sharp, fine and closely crowded, the outer seed-coat exfoliating irregularly, especially the brown tips of the murications adhering to the low, flat markings of the inner coat; sheaths rarely becoming fibrillous . . . . *14. H. mexicana.*

P. Murications very low and broad, the remnants of the outer coat adhering irregularly, especially around the bases of the low, black processes; seeds mostly black; sheaths scarcely fibrillous . . . . *15. H. catamarcensis.*

1. H. juncea Smith. Corm elongate, 5–12 mm. thick, covered with membranous or slightly fibrillous, brown sheaths: leaves filiform, canaliculate or involute, 0.4–0.8 mm. broad, up to 3.5 dm. long: peduncles filiform, loosely pilose or glabrate, 0.5–2 dm. long, 1–2-flowered: ovary and capsule densely pilose: perianth with lanceolate to narrowly elliptic, acutish segments, 0.8–1.5 cm. long: capsule ellipsoid, 4–6 mm. long: seeds about 1 mm. in diameter, black, lustrous, the outer coat covered with flattened or truncated pebbling.—Spicil. ii. 15, t. 16 (1792): Willd. Spec. ii. 110 (1799): Aiton fil. Hort. Kew. ed. 2: ii. 255, (1811): Pursh, Fl. Sept. Amer. i. 224 (1814): Roem. & Schultes, Syst. Veg. vii. 761 (1830). *H. filifolia* Elliott, Sketch, 397 (1817).—Pine barrens of Florida, locally north to South Carolina.

Elliott in his *Botany of South Carolina* said he had not seen any species of *Hypoxis* that was strictly one-flowered although he accorded

H. juncea recognition as a species on "the high authority of Sir J. E. Smith." He also called the few-flowered but otherwise similarly described plant *H. filifolia.* I have examined seeds of both the one- and the few-flowered specimens and I have found practically no differences between them. The original description and plate are characteristic although Smith stated that his plant was "Discovered

Fig. 1. H. juncea and seed.

in boggy ground in Carolina by the indefatigable Mr. John Fraser, from whose garden this specimen was obtained." *H. juncea* is very common in Florida and, judging by herbarium representation, rare in Georgia and extremely local in South Carolina (seen only from Charleston). Prior to the publication of *H. juncea,* Fraser had collected extensively in South Carolina and in Georgia and since Elliott's *H. filifolia* also came from South Carolina and Georgia it may be that *H. juncea* has a broader range than herbarium-material

indicates. It is possible, however, that Elliott, who lived at Charleston, knew the plant at the northern limit of its range. *H. juncea* has been credited to Alabama but upon the only reputed Alabama specimen in the National Herbarium, Mohr made the memorandum: "Locality doubtful, of later years not found in Alabama." The species is not admitted in Mohr's *Plant Life of Alabama*.

The following are referred here. SOUTH CAROLINA: *M. A. Curtis*, fragmentary specimen (hb. Mo. Bot. Gard.); near Charleston, *Beyrich* (hb. Mo. Bot. Gard.). GEORGIA: one plant, ex. herb. George Thurber (hb. Gray); three plants, *Le Conte* (hb. Phil. Acad.); plant collected by *Dr. Harden* in 1884 (hb. Phil. Acad. no. 567726) of doubtful authenticity since the specimen is of separate, filiform, canaliculate leaves stuck loosely around an *Hypoxis* scape which is badly preserved; Chatham County, Savannah, *C. S. Williamson* (hb. Phil. Acad.); Wayne County, Jessup, low pine barrens, *A. Ruth*, 1893 (hb. Mo. Bot. Gard.); Berrian County, *Le Conte* (hb. Phil. Acad.); Camden County, St. Mary's, *D. B. Smith* (hb. Phil. Acad.); Lowndes County, rather dry pine barrens south of Melrose, geological formation, Oligocene overlaid by Lafayette and Columbia, altitude 48.8 meters (160 feet), *Roland M. Harper*, no. 1604 (hb. U. S. Nat. Mus., hb. Mo. Bot. Gard., hb. Gray, hb. N. Y. Bot. Gard.). FLORIDA: Since the bulk of the herbarium material of this species comes from Florida only specimens having seeds or their duplicates are cited from this state. Duval County, pine barrens near Jacksonville, *A. H. Curtiss*, no 2838 (hb. Gray, hb. Phil. Acad., hb. Mo. Bot. Gard., hb. U. S. Nat. Mus.); Franklin County, low pine barrens, Apalachicola, no. 2527[a], "distribution of duplicates of the Chapman herb" (hb. U. S. Nat. Mus., hb. Gray); Lake County, collected in the vicinity of Eustis, low pine land, *Geo. V. Nash*, no. 952 (hb. U. S. Nat. Mus., hb. Mo. Bot. Gard., hb. N. Y. Bot. Gard., hb. Gray); in vicinity of Eustis, *Geo. V. Nash*, no. 789 (hb. Phil. Acad., hb. U. S. Nat. Mus.) and no. 2072 (hb. U. S. Nat. Mus.); Brevard County, Indian River, *Edward Palmer*, no. 557 (hb. U. S. Nat. Mus., hb. Gray); Polk County, wet soils, *L. B. Ohlinger*, no. 599 (hb. Mo. Bot. Gard.); Pinellas County, Dunedin, *S. M. Tracy*, no. 6866 (hb. U. S. Nat. Mus., hb. Mo. Bot. Gard., hb. N. Y. Bot. Gard.); Manatee County, in pine forests, Osprey, *Benjamin H. Smith*, (hb. Phil. Acad.); Bradentown, *S. M. Tracy*, no. 7514 (hb. Mo. Bot. Gard.); Lee County, vicinity of Fort Myers, in pineland, *Miss Jeanette P. Standley*, no. 7 (hb. U. S. Nat. Mus., hb. Gray, hb. Mo. Bot. Gard., hb. N. Y. Bot. Gard.) and in pine woods, *Paul C. Standley*, no. 12963 (hb. U. S. Nat. Mus.). Locality unknown, *Chapman*, two sheets with seeds, one in the Gray Herbarium and the other in the herbarium of the Mo. Bot. Gard. ALABAMA: hb. Charles Mohr "locality doubtful, of later years not found in Ala., not admitted in catalogue," *Buckley* (hb. U. S. Nat. Mus.).

This material was mostly distributed as *H. juncea* or as *H. filifolia*.

2. H. hirsuta (L.) Coville. Corm subglobose to ellipsoid, 0.5–2 cm. thick, covered with membranaceous, pale or brown-tinged sheaths not becoming fibrillous: leaves linear, rather firm, 1–8 mm. broad, 1–6 dm. long; peduncles filiform, stiffish or spreading, 0.4–3.5 dm. long, mostly 2–7-flowered; the pedicels elongate; ovary and capsule densely pilose; perianth-segments lanceolate to elliptic or narrowly ovate, 0.5–1.5 cm. long; capsule ellipsoid, 2–6 mm. long; seeds 0.8–1.3

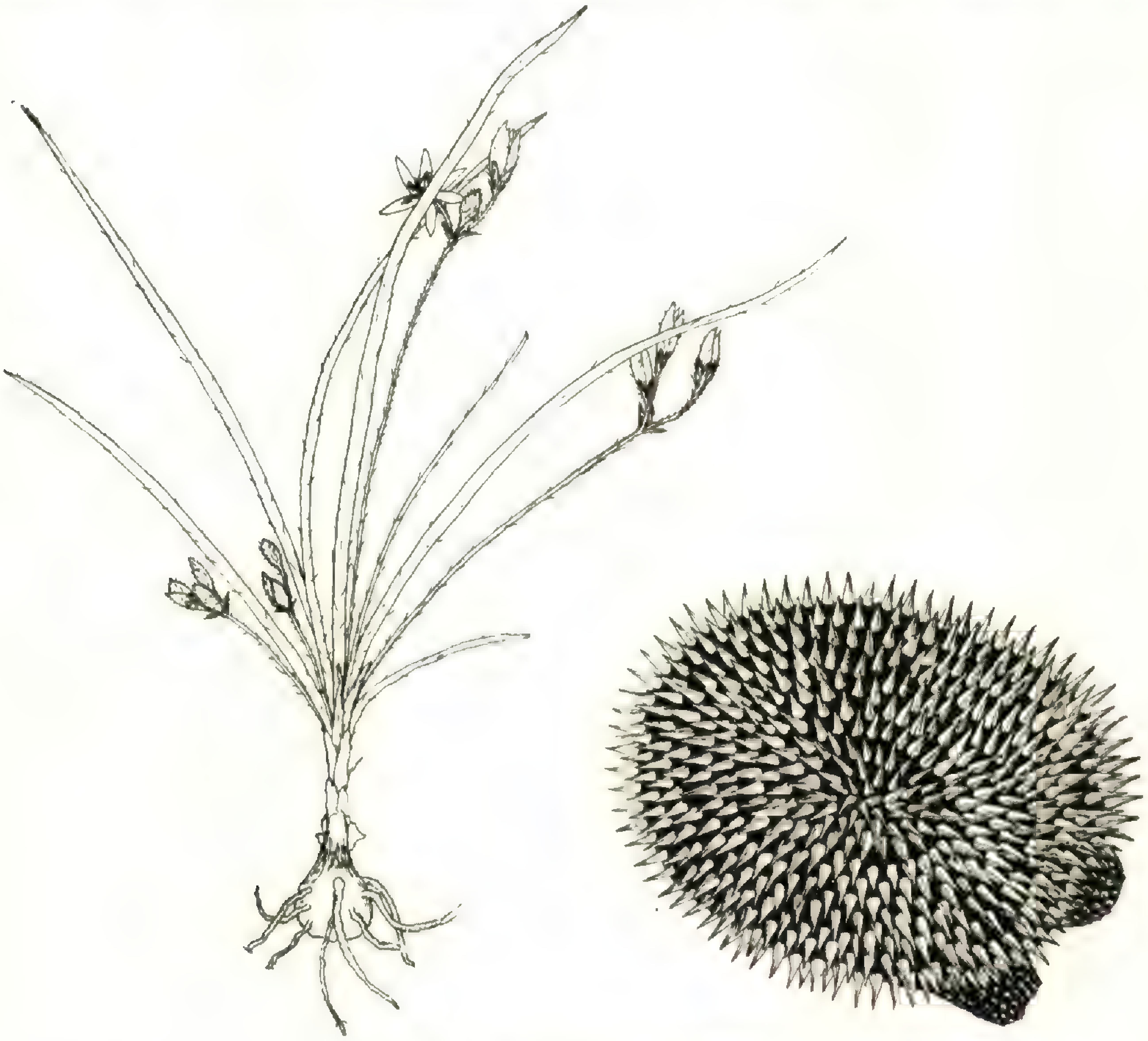

Fig. 2. H. hirsuta and seed.

mm. in diameter, black, lustrous; the outer coat closely covered with sharp murications.—Mem. Torr. Bot. Cl. v. 118 (1894). *Ornithogalum hirsutum* L. Sp. 306 (1753). *H. erectum* L. Syst. ed. 10, ii. 986 (1759). *H. pallida* Salisb. Prodr. 248 (1796). *H. carolinensis* Michx. Fl. Bor.-Am. i. 188 (1803). *H. graminea* Pursh, Fl. Am. Sept. i. 224 (1814). *H. grandis* Pollard in Small, Fl. S. E. U. S. 287 and 1329 (1903).—Open woods, meadows, and pastures, southern New Hampshire to Manitoba, south to Florida and Texas, ascending in the southeastern states to an altitude of 1220 meters (4000 feet).

Extremely variable in breadth of leaf and size and shape of perianth-segments but throughout its range not readily separated into definite

varieties. The broad-leaved plant distinguished as *H. grandis* Pollard from the southern states is often found north to New York and New England while the narrowest-leaved phase, *H. carolinensis* Michx., occurs westward to Manitoba, Minnesota, Iowa and Oklahoma. The seed ordinarily has very sharp murications but often the northern plant has the murications broader and less acute than usual thus closely connecting the typical plant with the variety. Since *H. hirsuta* is so very common and the various herbaria contain hundreds of sheets, only a few specimens, with seeds unless otherwise stated, and their duplicates at the limits of the ranges, as shown by the herbarium material, are cited here.

New Hampshire: Pelham, Hillsboro County, *Clarence H. Knowlton* (hb. Gray). Massachusetts: swamp, Falmouth, Barnstable County, *Clarence H. Knowlton* (hb. Phil. Acad., hb. Gray). Connecticut: Bridgeport, *E. H. Eames*, no. 1 (hb. Gray). New York: Long Island, *H. von Schrenk* (hb. Mo. Bot. Gard.). New Jersey: between Tuckerton and Atsion, *C. F. Saunders & W. N. Clute* (hb. Phil. Acad.). Delaware: dry soil, Greenbank, *A. Commons* (hb. Mo. Bot. Gard.). Maryland: Baltimore County, *John Donnell Smith* (hb. U. S. Nat. Mus.). Virginia: Bay Bank, Hampton, *D. Harrison* (hb. U. S. Nat. Mus.). South Carolina: Newry, Oconee County, *H. D. House* (hb. Mo. Bot. Gard.). Georgia: Stone Mountain, *H. Eggert* (hb. Mo. Bot. Gard.). Alabama: *Charles L. Pollard & William R. Maxon*, no. 72 (hb. U. S. Nat. Mus.). Mississippi: dry soil, Meridian, Lauderdale County, *Biltmore Herb.*, no. 529[c] (hb. U. S. Nat. Mus.). Texas: Dallas, damp sands, *Reverchon*, no. 2760 (hb. Mo. Bot. Gard.). Oklahoma: Page, *O. W. Blakley*, no. 1408 (hb. Mo. Bot. Gard., hb. Gray. hb. U. S. Nat. Mus.) and no. 3433. (hb. Mo. Bot. Gard., hb. Gray). Colorado: Denver, *Schneck*, without seeds (hb. Mo. Bot. Gard.). Nebraska: meadow, Platte Islands, Kearney, *Ernest R. Holmes* (hb. N. Y. Bot. Gard.). South Dakota Brookings, *Thos. A. Williams* (hb. Mo. Bot. Gard.). North Dakota: Butte, Benson County, *Dr. J. Lunell* (hb. N. Y. Bot. Gard.). Assiniboia: near Moose Mt. Creek, meadows and open woods, *Jas. M. Macoun* (hb. Gray). Manitoba: Stony Mt., *John Macoun*, no. 13799 (hb. Gray).

2a. Var. **leptocarpa** (Engelmann & Gray), n. comb. Leaves very thin and flaccid, often quite glabrous, 3.5–12 mm. broad, 2–8 dm. long; peduncles very slender and lax, mostly 1–3(rarely 4)-flowered; perianth-segments 5–8 mm. long; mature capsules 4–10 mm. long, slightly pubescent to glabrate; seeds black, with bluntish murications. —*H. erecta*, var. *leptocarpa* Engelmann & Gray, Bost. Journ. Nat. Hist. v. 239 (1845). *H. leptocarpa* Engelmann in Engelmann & Gray, l. c. (1845). *H. Curtissii* Rose in Small Fl. S. E. U. S. 287 and

1329 (1903). *H. decumbens* Chapman, Fl. ed. 2, supplement 2: 696 (1892), not L.—Wet woods, swamps and bottom-lands, North

FIG. 3. H. hirsuta, var. leptocarpa.

Carolina to Florida and Texas. The following specimens are referred here. NORTH CAROLINA: in damp clay soil, Goldsboro, Wayne County, *Biltmore Herb.*, no. 529^{d}, with seeds (hb. U. S. Nat. Mus.).

Georgia: rich damp woods, Dublin, Laurens County, *R. M. Harper*, no. 1365 (hb. Gray, hb. U. S. Nat. Mus., hb. Mo. Bot. Gard.). Florida: Apalachicola, with seeds, *Chapman* (hb. N. Y. Bot. Gard.); shore of St. John's River at Tocoi, growing in water, *A. H. Curtiss*, no. 2837*, with seeds (hb. U. S. Nat. Mus., hb. Mo. Bot. Gard.) distributed as *H. leptocarpa* Engelmann; swamps near Jacksonville, *A. H. Curtiss*, no. 4727, with seeds (hb. U. S. Nat. Mus., hb. N. Y. Bot. Gard.); river banks, Apalachicola, *Chapman*, no. 4015, with seeds (hb. U. S. Nat. Mus.), distributed as *H. decumbens* L.; Palmetto, *S. M. Tracy*, no. 6621 (hb. U. S. Nat. Mus., hb. Mo. Bot. Gard., hb. Gray). Louisiana: Lake Charles, Calcasien Parish, *E. J. Palmer*, no. 8519 (hb. Mo. Bot. Gard.). Texas: sandy soil, near water courses, *F. Lindheimer*, no. 188 (hb. Gray).

3. H. decumbens L. Corm cylindric to ellipsoid, 0.7–2 cm. thick; the membranaceous sheaths not fibrillous: leaves flaccid, often falcate, linear to lanceolate, 2–12 mm. broad, 1–4 dm. long, sparsely pilose to glabrate; peduncles filiform, loosely ascending or recurving, 0.2–2 dm. long, villous above, 1–4-flowered; perianth-segments lanceolate, acute, 4–10 mm. long; mature pedicels 1–20 mm. long, mostly equalled by the bracts; capsule club-shaped, cylindric or slenderly ellipsoid, usually densely pilose, 0.6–1.7 cm. long; seeds 0.8–1.2 mm. in diameter, black, dull or but slightly lustrous, covered with low, rounded scarcely confluent pebbling.—Pl. Jam. Pugill. 11 (1759) & Syst. ed. 10, 986 (1759). *H. caricifolia* Salisb. Prodr. 248 (1796). *H. gracilis* Lehm. ex Schultes f. Syst. vii. 764 (1830). *H. decumbens*, var. *mexicana* (Schultes f.) Jennings, Ann. Carnegie Mus. xi. 97 (1917).—In open woods and pastures in the Antilles, tropical Mexico and South America. Since the herbarium material is so abundant for this species only one or two typical plants having seeds, and their duplicates, from each locality are cited here. Cuba: near Monte Verde, *C. Wright*, no. 1515 (hb. Gray, hb. Mo. Bot. Gard., hb. N. Y. Bot. Gard.). Jamaica: Cinchona, *Willard N. Clute*, no. 208 (hb. U. S. Nat. Mus., hb. Mo. Bot. Gard., hb. Phil. Acad., hb. Gray.). Haiti: on banks, Petit Borgne to Mt. Casse, *George V. Nash*, no. 488 (hb. N. Y. Bot. Gard.); on banks, Mt. Maleuvre to Mt. Piment, *Geo. V. Nash & Norman Taylor* no. 1183 (hb. N. Y. Bot. Gard.). San Domingo: Prov. of Vega, *Miguel Fuertes*, no. 1704 (hb. N. Y. Bot. Gard.). Porto Rico: in pineapple plantations near Mayaguez, *Holm*, no. 67 (hb. Mo. Bot. Gard., hb. Gray). Tortola: hillside, 325 m. alt., *N. L. Britton & J. A. Shafer*, no. 779 (hb. N. Y. Bot. Gard., hb. U. S. Nat. Mus.). Antigua: *J. N. Rose, Wm. R. Fitch & Paul G. Russell*, no. 3346 (hb. U. S. Nat. Mus., hb. N. Y. Bot. Gard.). Dominica: *Francis E. Lloyd*, no. 579 (hb. N. Y. Bot. Gard.). Martinique: *Père Duss*, no. 2011 (hb. U. S. Nat. Mus., hb. N. Y. Bot. Gard.). St. Vincents: *H. H. Smith, G. W. Smith, & Comn. F. D. Godman*, no. 14 (hb. N. Y. Bot. Gard.). Tobago: Mason Hall near the river, *W. E. Broadway*,

Fig. 4. H. decumbens and seeds (showing variation).

no. 4724 (hb. Gray, hb. U. S. Nat. Mus., hb. Mo. Bot. Gard., hb. N. Y. Bot. Gard.). Mexico: Alvarez, state of San Luis Potosi, *Dr. Edward Palmer*, no. 232 (hb. Mo. Bot. Gard., hb. U. S. Nat.

Mus., hb. N. Y. Bot. Gard.). Costa Rica: *Tonduz*, no. 8028 (hb. U. S. Nat. Mus.). Panama: moist field at foot of Piedro de Lino,

Fig. 5. H. decumbens, var. major.

E. P. Killip, no. 3570 (hb. U. S. Nat. Mus.). Colombia: forests of Popayan, *Lehmann*, no. 7599 (hb. N. Y. Bot. Gard.). French Guiana: vicinity of Cayenne, *W. E. Broadway*, no. 220 (hb. Gray, hb. N. Y. Bot. Gard.). Equador: in the Andes, *R. Spruce*, no.

5068 (hb. Gray). BRAZIL: near Rio de Janeiro, from the herbarium of the U. S. South Pacific Exploring Expedition under the command of Capt. Wilkes, U. S. N. 1838–42 (hb. Gray). GALAPAGOS ISLANDS: common in open woodlands at 183 m. (600 ft.), Albemarle, *Alban Stewart*, no. 1135 (hb. Mo. Bot. Gard., hb. U. S. Nat. Mus., hb. Gray). PARAGUAY: *Dr. E. Hassler*, no. 5562 (hb. Gray).

This material was mostly distributed as *H. decumbens*.

3a. Var. MAJOR Seubert. Plants coarser than the above; seeds similar.—Seubert in Mart. Fl. Brasil. iii. pt. i. 51, t. 7, f. 1(1847). *H. racemosa* Donnell Smith, Bot. Gaz. xiv. 30 (1889).—Locally throughout the range of the above. The following are referred here. MEXICO: Orizaba, *Botteri*, no. 80 (hb. Gray), no. 455 (hb. Gray), 463 (hb. Gray); Mt. Orizaba, *Henry E. Seaton* (hb. Gray). SAN LUIS POTOSI: Alvarez, *Dr. Edward Palmer*, no. 581 (hb. U. S. Nat. Mus.). VERA CRUZ: near Jalapa, *J. N. Rose & Walter Hough*, no. 4326 (hb. U. S. Nat. Mus.). JAMAICA: Tyre, near Troy, *Wm. Harris*, no. 9401 (hb. U. S. Nat. Mus.). GUATEMALA: Dept. Alta Verapaz, *H. von Tuerckheim*, no. 3842 (hb. U. S. Nat. Mus.); Coban, Dept. Alta Verapaz, *Tuerckheim*, no. 33 (hb. Gray). COLOMBIA: Santa Marta, *Herbert H. Smith*, no. 2266 (hb. Gray). VENEZUELA: *A. Fendler*, no. 1565 (hb. Gray, hb. N. Y. Bot. Gard.). TRINIDAD: from herb. of Otto Kuntze, no. 959 (hb. N. Y. Bot. Gard.); Lookout Hill, *W. E. Broadway* (hb. Mo. Bot. Gard.). BRAZIL: near Rio de Janeiro, hb. of the U. S. South Pacific Exploring Expedition under the command of Capt. Wilkes, U. S. N. (hb. U. S. Nat. Mus.). PARAGUAY: *Fiebrig*, no. 891 (hb. Gray).

This material was distributed simply under the generic name or, if further determined, as *H. decumbens* or as *Curculigo scorzonerae-folia* (Lam.) Baker.

4. H. RIGIDA Chapman. Corm subcylindric to ellipsoid, 0.6–1.5 cm. thick, covered with the stiff bristly bases of the old sheaths or rarely with membranous, slightly disintegrating leaf bases: leaves rather rigid, linear, 1–4 mm. broad, 0.7–4 dm. long; peduncles glabrate, 0.3–3 dm. long, 1–3-flowered; ovary and capsule pilose; perianth-segments 7–12 mm. long, lanceolate to oblong, acutish, densely pubescent without; capsule narrowly obovoid, 1–9 mm. long; seeds 1 mm. in diameter, black, opaque or slightly lustrous, covered with short, rounded, approximate pebbling.—Fl. So. U. S. ed. 2. Suppl. 2: 696 (1892).—Low pine barrens, North Carolina to Florida and Texas. The following are referred here. LOCALITY UNKNOWN: one plant with seeds (hb. Gray); *Chapman*, no. 4573, without seeds (hb. Mo. Bot. Gard.). FLORIDA: *F. Rugel*, 1842–1849, ex herb. Mus. Brit., without seeds (hb. Mo. Bot. Gard.); Apalachicola, *Chapman*, with seeds (hb. U. S. Nat. Mus.), *Chapman*, ex herb. Chas. Mohr (hb. U. S. Nat. Mus.). ALABAMA: Mobile, *Chas. Mohr*,

without seeds (hb. U. S. Nat. Mus.). MISSISSIPPI: Biloxi, *S. M. Tracy*, no. 5090 (sheets with and without seeds at hb. U. S. Nat. Mus., also one sheet without seeds at hb. Mo. Bot. Gard.), no. 5091, without seeds (hb. U. S. Nat. Mus.), no. 5092, with seeds (hb. U. S.

FIG. 6. H. rigida and seed.

Nat. Mus.), no. 5093, without seeds (hb. U. S. Nat. Mus.), Ocean Springs, without seeds (hb. Mo. Bot. Gard.). LOUISIANA: open sandy ground, Natchitoches Parish, *E. J. Palmer*, no. 1566, with seeds (hb. Mo. Bot. Gard.); Alexandria, *Josiah Hale*, with seeds (hb. U. S. Nat. Mus.). TEXAS: thirty miles northeast of Beaumont, *W. L. Bray*, no. 68, without seeds (hb. U. S. Nat. Mus.); Swan, swamps,

"flowers shut after noon," *J. Reverchon*, no. 2759, with seeds (hb. Mo. Bot. Gard., hb. U. S. Nat. Mus.); Pine Island, Angelina, *J. Reverchon*, no. 2780, without seeds (hb. Mo. Bot. Gard.).

As shown by the herbarium sheets this plant has sometimes been distributed as *H. juncea* Smith. Although rarely it tends to approach *H. juncea* in habit, generally it has a dense tuft of coarse fibers at the base and wider leaves. It has also been distributed as *H. decumbens* L., but superficially it differs from *H. decumbens* in having a stiff tuft of bristles at the base, while the leaves of *H. decumbens* do not disintegrate into fibers. Most often it has been distributed as *H. hirsuta* (L.) Coville. The bristly base and the coarser texture of the leaves should superficially distinguish it from *H. hirsuta*. The seeds clearly separate it from each of the above mentioned species.

5. **H. tepicensis**, n. sp., cormo ellipsoideo 9 mm. crasso vaginis scariosis fibrillosis pallide brunneis investo; foliis linearibus subrigidis 3–6 mm. latis 0.6–4 dm. longis sparse pilosis; pedunculis sparse pilosis vel glabratis 0.4–3 dm. longis; pedicellis arcuatis 2–5 cm. longis; ovario capsulaque pilosis; segmentis perianthii lanceolatis subacutis 7–10 mm. longis extus viridibus; capsulis ellipsoideis 4–8 mm. longis; seminibus 0.7–1.3 mm. diametro atris densissime papillosis, papillis valde elongatis obtusis.

Corm ellipsoidal, 9 mm. thick, covered with scarious, fibrillous, light brown sheaths; leaves linear, rather rigid, 3–6 mm. broad, 0.6–4 dm. long, sparsely pilose; peduncles sparsely pilose or becoming glabrate, 0.4–3 dm. long; pedicels curving, 2–5 cm. long; ovary and capsule pilose: perianth-segments lanceolate, rather acute, 7-10 mm. long, green outside: capsule ellipsoidal, 4–8 mm. long; seeds 0.7–1.3 mm. in diameter, black, very densely papillose; the papillae strongly elongated and obtuse.—In western Mexico. The following are referred here. Tepic: Pedro Paulo, *J. N. Rose*, no. 3319, as the type of this species, with seeds (hb. U. S. Nat. Mus.); between Pedro Paulo and San Blascito, *J. N. Rose*, no. 3307, with seeds (hb. U. S. Nat. Mus.).

6. H. sessilis L. Corm cylindric to slenderly ovoid, 0.5–1 cm. thick, covered with membranous but scarcely fibrillous brown sheaths; leaves linear, 1–4 mm. broad, 0.7–3 dm. long, firm; peduncles essentially wanting or up to 8 cm. long, filiform, pilose; ovary and capsule densely pilose; perianth-segments lanceolate, rather acute, 7–12 mm. long; capsule pyriform, 3–4 mm. long; seeds black, ellipsoid, 1–4 mm. in diameter; the low, flat pebbling almost completely covered with a closely granular film or coating of a golden-brown iridescent material; the short beak and rostrate hilum black.—Sp. Pl. ed. 2. 439 (1762). *H. erecta*, β *aestivalis* Engelm. & Gray, Bost. Journ.

Nat. Hist. v. 239 (1845).—Dry pine barrens and sandy openings, in the southern United States.

Fig. 7. H. tepicensis and seed.

Linnaeus based *H. sessilis* solely upon *Ornithogali Virginici facie, Herba tuberosa carolinensis* of Dillenius, Hort. Elth. ii. 298 t. 220 f. 287. This plant was described as coming from Carolina and having sessile flowers. Although the description and the conventional plate

are not conclusive the plant here treated as *H. sessilis* was presumably intended. The Carolina plant, as shown by herbarium material, does not have the flower strictly sessile, nor are the leaves as large as in Dillenius's plate; but the latter besides being crude was made from a cultivated plant. In view of this plant from "Carolina" it would be unwise to set up as a distinct species the plant we actually know from that region.

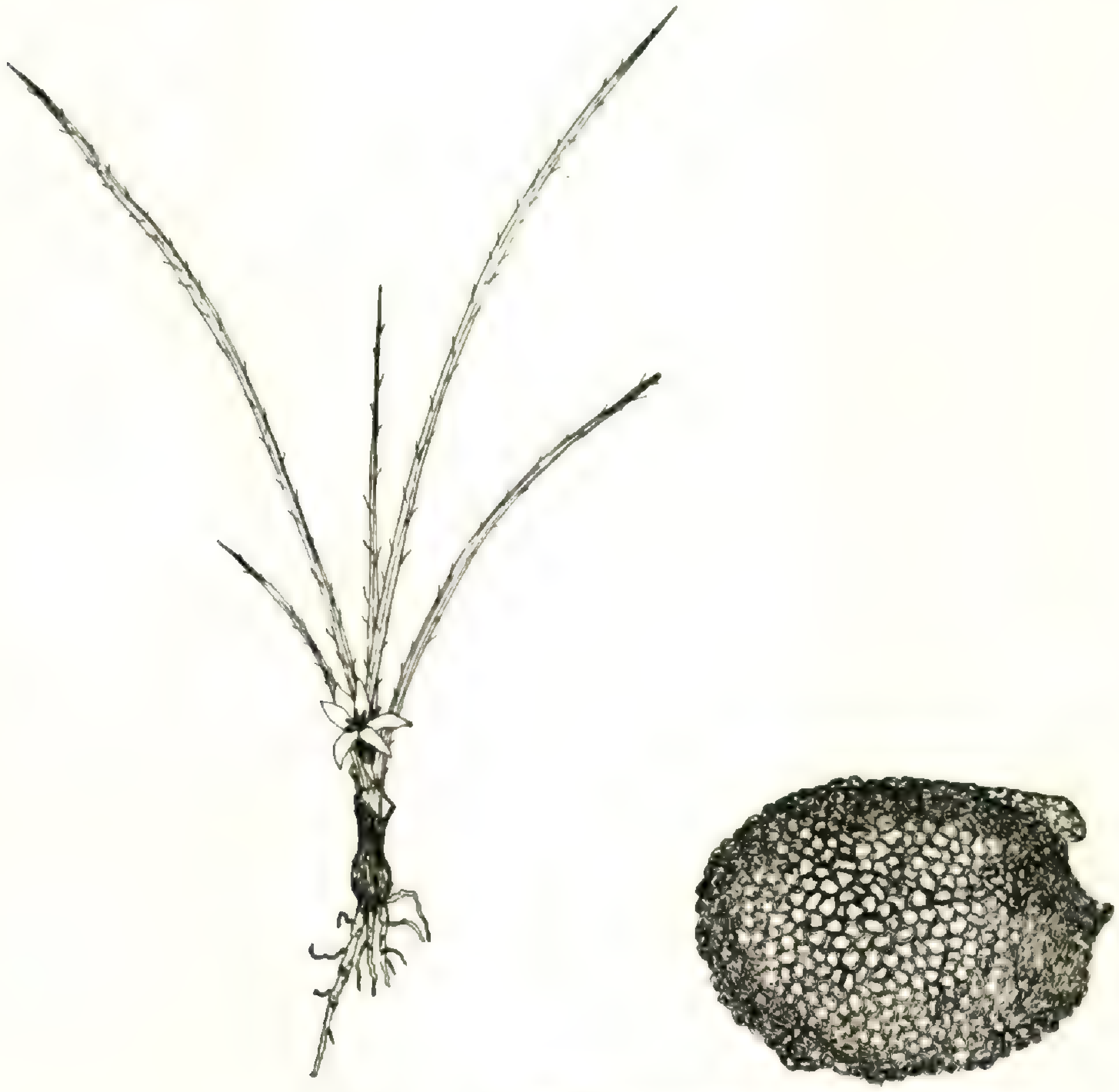

Fig. 8. H. sessilis and seed.

Some excellent specimens in the herbarium of the Missouri Botanical Garden were sent to Bernhardi labeled in Engelmann's hand *H. erecta* β *aestivalis*; other material originally retained by Engelmann (with Lindheimer's field label) is unmarked, but is identical with the material sent Bernhardi and the fragmentary plants in the Gray Herbarium, originally marked by Dr. Gray as var. *aestivalis*. These specimens are without seeds but they seem identical with the material from the southeastern United States that is called *H. sessilis*.

The following are referred to this species. LOCALITY UNKNOWN: *Chapman*, no. 3856, with seeds (hb. Mo. Bot. Gard.). NORTH CAROLINA: Wilmington, *C. S. Williamson*, without seeds (hb. Phil. Acad.). SOUTH CAROLINA: sandy loam in open places, Summerville, *B. L. Robinson*, no. 176, without seeds (hb. Gray). FLORIDA: *F. Rugel*, 1842–1849, ex herb. Mus. Brit. no. 132, without seeds (hb. Mo. Bot. Gard.). ALABAMA: ex herb. George Thurber, with seeds (hb. Gray); *Gates*, with seeds (hb. Phil. Acad.); *Buckley*, with seeds (hb. N. Y. Bot. Gard.). TEXAS: *Lindheimer*, no. 187, without seeds (hb. Gray, hb. Mo. Bot. Gard.). Also two specimens from South Carolina. One was sent in a letter by M. A. Curtis, from Society Hill, Sept. 15, 1853, to Dr. Gray with the following remarks, "I send also an abortive Hypoxis now not uncommon here as a second growth of the season. Flower three cleft, white." The seeds of this plant have very little of the golden iridescent coloring but show a marked preponderance of a brilliant blue color. The other was sent by Miss Laura M. Bragg to Professor Fernald from Dackon, Berkeley Co., with the following field label, "In second growth . . . pineland. Broom grass association. Coll. . . . June 21, 1920." Both of the above specimens have longer leaves than the usual *H. sessilis* and the flowers are only three-cleft.

7. H. BREVISCAPA HBK. Corm subglobose 5–7 mm. thick, covered with dark brown, membranous sheaths disintegrating into tufts of fibers; leaves lanceolate, decidedly narrowed at the base, about 2 mm. broad, up to 1.2 dm. long, pilose; peduncles filiform, about 3.5 cm. long, 1–2-flowered; ovary and capsule pilose; perianth-segments narrowly elliptic, 3–4.5 mm. long; capsule subcylindric, 5–7 mm. long; seeds about 0.8–1.1 mm. in diameter, black, covered with a brown exfoliating outer coat that is flecked with iridescent material.—Gen. et Sp. Pl. i. 286 (1815).—Plateaus in South America.

H. breviscapa was reported by Humboldt, Bonpland and Kunth as coming from Brazil. The one sheet of herbarium material answering the description of this species, no. 1042, with seeds, *Miguel Bang* (hb. N. Y. Bot. Gard.), came from Bolivia. It shows the leaves narrow at the base as the Brazilian plant is described, and all but one of the plants have a single flower to each peduncle.

8. H. MICRANTHA Pollard. Corm subglobose to subcylindric, 4–12 mm. thick, covered with the dark membranaceous bases of the old leaves rarely disintegrating into bristly fibers; leaves linear-lanceolate, 1–6 mm. broad, 0.8–4 dm. long, pilose; peduncles pilose, 5–18 cm. long; ovary and capsule pilose; perianth-segments 3.5–15 mm. long, rather acute at the apex; capsule subglobose to subcylindric, 4–9 mm. long; seeds brown, covered with very numerous, minute, awl-shaped murications.—Pollard in Small, Fl. S. E. U. S. 287 and 1329 (1903).—Southern United States and adjacent islands. The fol-

lowing are referred here. NORTH CAROLINA: *G. McCarthy*, "type specimen," without seeds (hb. U. S. Nat. Mus.); *G. McCarthy*, without seeds (hb. U. S. Nat. Mus.); Wilmington, *Edwin B. Bartram*, without seeds (hb. N. Y. Bot. Gard.). SOUTH CAROLINA: pine barrens two miles north of Manning, Clarendon County, *Witmer Stone*, no. 72, with seeds (hb. Phil. Acad.); near Kittredge railroad station, Berkeley County, with seeds (loaned by Miss Bragg). FLORIDA: Apalachicola, with seeds (hb. Mo. Bot. Gard. no. 107259); Apalachicola, *Chapman*, with seeds (hb. N. Y. Bot. Gard.); Aspalaga,

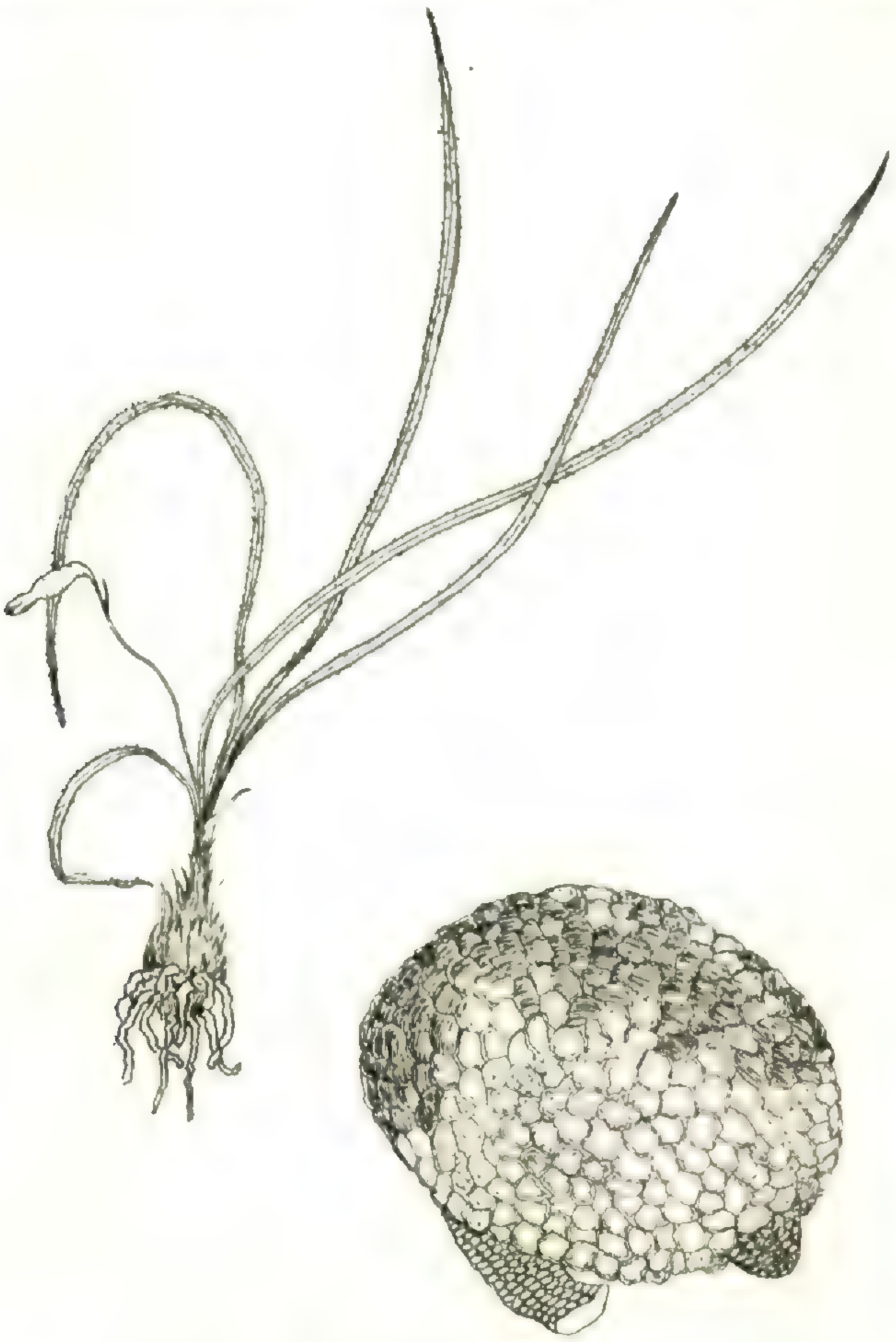

FIG. 9. H. breviscapa and seed.

Chapman, with seeds (hb. Mo. Bot. Gard. nos. 760670 and 760671). MISSISSIPPI: *S. M. Tracy*, no. 5095, with seeds (hb. N. Y. Bot. Gard.); Biloxi, *S. M. Tracy*, no. 6418 (with seeds, hb. Mo. Bot. Gard. nos. 107313 and 107314, without seeds, hb. U. S. Nat. Mus., with seeds, hb. N. Y. Bot. Gard.). Most specimens from the above states, without seeds, I have omitted from this list. LOUISIANA: Natchitoches, *E. J. Palmer*, no. 7380, without seeds (hb. Mo. Bot. Gard.). TEXAS: Marshall, Harrison County, *E. L. Palmer*, no. 5316, without seeds (hb. Mo. Bot. Gard.); *Elihu Hall*, no. 632, without seeds (hb. U. S. Nat. Mus., hb. Gray, hb. N. Y. Bot. Gard.). ISLE OF PINES:

vicinity of San Pedro, pinelands, *N. L. Britton, Percy Wilson & A. D. Selby*, no. 14332, with seeds (hb. N. Y. Bot. Gard.).

This material was distributed mostly without a specific name, as *H. juncea* Smith, or in a few instances as *H. micrantha.*

FIG. 10. H. micrantha (left) and seed (below).
H. potosina (right) and seed (above).

9. **H. potosina**, n. sp., cormo globoso vel subcylindrato 0.8–1.3 cm. crasso vaginis membranaceis et saepe fibrillatis brunneis investo; foliis lineari-lanceolatis crassis dense pilosis (juventute subtus villosis) 1.2–4.8 mm. latis usque ad 3.5 dm. longis; pedunculis subfiliformibus canaliculatis pilosis 0.7–1.2 dm. longis uni- vel pauci-floris; ovario

capsulaque dense pilosis; segmentis perianthii pilosis ellipticis 5–13 mm. longis; seminibus 0.8–0.9 mm. diametro brunneis, testa aculeis elongatis munita, funiculo foramineque atris a naevo lucido atro spathulato circumscriptis.

Corm globose to subcylindric, 0.8–1.3 cm. thick, covered with membranous and often fibrillous brown sheaths; leaves linear-lanceolate, coarse in texture and rather densely pilose (when young villous on the lower surface) 1.2–4.8 mm. broad, up to 3.5 dm. long; peduncles coarsely filiform, canaliculate, pilose, 0.7–1.2 dm. long, 1-few-flowered; ovary and capsule densely pilose; perianth with hairy elliptic segments 3–7.5 mm. long; capsule subcylindric to ellipsoidal, 5–13 mm. long; seeds 0.8–0.9 mm. in diameter, brown, the outer coat covered with sharp, prolonged murications; the black beak and hilum set in a lustrous, black, pyriform spot.—At high altitudes in Central Mexico. The following are referred here. San Luis Potosi: altitude 1830–2440 m. (6000–8000 feet), in region of San Luis Potosi, *Parry & Palmer*, no. 871, with seeds (hb. Gray, type, hb. U. S. Nat. Mus., hb. Phil. Acad., hb. Mo. Bot. Gard.); low ground about San Luis Potosi, *Schaffner*, no. 545, with seeds (hb. Gray).

This material was distributed as *H. decumbens* L. but it differs from that species in having a fibrous base and rigid, coarsely veined, densely pilose leaves as well as in having very different seeds.

10. **H. Wrightii** (Baker), n. comb. Corm subglobose, 6–12 mm. thick, covered with membranous and somewhat fibrillous brown sheaths; leaves linear, canaliculate or involute, 0.4–3 mm. broad, up to 2.6 dm. long; peduncles filiform, pilose, 0.4–1.2 dm. long, 1–2-flowered; ovary and capsule densely pilose; perianth with lanceolate to narrowly elliptic, acutish segments, 0.4–8.1 cm. long; capsule subglobose or ellipsoidal, 4–6 mm. long; seeds 0.8–1.1 mm. in diameter, black, lustrous, the outer coat covered with flattened, truncated and crudely carved pebbling.—*H. juncea*, var. *Wrightii* Baker, Journ. Linn. Soc. xvii. 106 (1878).—Florida Keys, Bahama Islands and the West Indies. The following are referred here. Florida Keys: Pinelands, Big Pine Key, *J. K. & G. K. Small*, no. 5028, with seeds (hb. N. Y. Bot. Gard.). Bahama Islands: moist, loamy clay and honeycomb limestone, pine region, about five miles southwest of Nassau, *A. E. Wight*, no. 271, without seeds (hb. Gray); New Providence, grassy places, race course, *N. L. Britton & L. J. K. Brace*, no. 286, with seeds (hb. N. Y. Bot. Gard.). Cuba: *C. Wright*, no. 3745 (distributed as *H. juncea*, var. *Wrightii*, with seeds, hb. Gray, hb. U. S. Nat. Mus., without seeds hb. N. Y. Bot. Gard.); near Monte Verde in eastern Cuba, *C. Wright*, January–July, 1859 (hb. Gray); province of Pinar del Rio between Pinar del Rio and Coloma, *N. L. Britton, E. G. Britton & J. F. Cowell*, no. 10062, without seeds (hb. N. Y. Bot. Gard.). Isle of Pines: *A. A. Taylor*,

Fig. 11. H. Wrightii and seed (left).
H. rugosperma and seed (right).

no. 71, without seeds (hb. U. S. Nat. Mus.); Neuva Gerona, *A. H. Curtiss*, without seeds (hb. N. Y. Bot. Gard.). Porto Rico: near Bayamon, *Sintenis*, no. 1067, without seeds, (distributed as *H. de-*

cumbens L., hb. U. S. Nat. Mus.). The plants in the list above, unless otherwise marked, were distributed as *H. juncea* Smith.

H. juncea, var. *Wrightii* was the name given by Baker to number 239, collected by Charles Wright in Cuba, because it differed from true *H. juncea* in having the capsule sparsely pilose and the outer leaves disintegrating into setaceous fibers. I have not seen number 239. In the specimens that I have examined, the leaves of *H. juncea* may frequently disintegrate more or less into fibers at the base, but the Cuban plants always show this disintegration of their outer leaves. Superficially, although the leaves of the Cuban plants are very narrow, those of *H. juncea* are even narrower and appear filiform. Also the seeds are very different. *H. juncea* has black seeds with murications truncated and sharply sculptured, but the Cuban plant has drab seeds marked with low, flat or corrugated pebbling. I have seen no West Indian specimens with the characteristic seeds of *H. juncea*; therefore I am raising var. *Wrightii* to specific rank.

11. **H. rugosperma**, n. sp., cormo globoso vel subcylindrato 0.6–1.5 cm. crasso, foliis exterioribus basi in fasciculo brunneo fibrarum dissolutis; foliis lineari-lanceolatis apice acutis pilosis 1.7–5 mm. latis usque 2.7 dm. longis; pedunculis subfiliformibus canaliculatis pilosis 0.4–1.2 dm. longis pauci-floris; ovario capsulaque dense pilosis; segmentis perianthii anguste ellipticis vel lanceolatis acutis 3–7 mm. longis; capsulis subcylindratis vel ellipsoideis 6–9 mm. longis; seminibus 0.8–1 mm. diametro brunneis, testa vesicula persistenti jugis confluentibus tenuibus et paullo rugosis irregulariter instructa.

Corm globose to subcylindric, 0.6–1.5 cm. thick; the outer leaves breaking up at the base into tufts of brown fibers: leaves linear-lanceolate, with an acute apex, pilose, 1.7–5 mm. broad, up to 2.7 dm. long; peduncles coarsely filiform, canaliculate, pilose, 0.4–1.2 dm. long; ovary and capsule densely pilose; perianth-segments narrowly elliptic or lanceolate, acute, 3–7 mm. long; capsule subcylindric or ellipsoidal, 6–9 mm. long; seeds 0.8–1 mm. in diameter, brown; the outer coat loose, persistent, irregularly covered with confluent, thin, slightly jagged crests.—In mountainous regions of Mexico and Central America. The following are referred here. Jalisco: cliffs near Guadalajara, *C. G. Pringle*, no. 2908, with seeds (hb. Gray, type). Guatemala: Santa Rosa, altitude 915 m. (3000 feet), *Heyde & Lux*, no. 2934, with seeds (two sheets in hb. U. S. Nat. Mus., hb. Gray).

This material was distributed as *H. decumbens* L. but is easily distinguished from that species by its fibrous base and more pilose leaves as well as by its seeds.

12. **H. fibrata**, n. sp., cormo globoso vel subcylindrato 7–19 mm. crasso vaginis membranaceis brunneis et dense fibratis investo; foliis linearibus subrigidis 1.8–5 mm. latis 0.6–2.5 dm. longis pilosis;

Fig. 12. H. fibrata and seed (left).
H. humilis and seed (right).

pedunculis pilosis filiformibus 1.5–15 cm. longis uni- vel pauci-floris; ovario capsulaque dense pilosis; segmentis perianthii anguste ellipticis 3–6 mm. longis; capsulis subcylindratis 5–9 mm. longis; seminibus brunneis processis firmis conicis subtruncatis haud confluentibus obsitis.

Corm globose to subcylindric, 7–19 mm. thick, covered with brown, membranous sheaths and dense fibers; leaves linear, rather rigid, 1.8–5 mm. broad, 0.6–2.5 dm. long, pilose; peduncles pilose, filiform, 1.5–15 cm. long, 1-few-flowered; ovary and capsule densely pilose, perianth-segments narrowly elliptic, 3–6 mm. long; capsule subcylindric, 5–9 mm. long; seeds brown, covered by firm, conical, rather truncated scarcely confluent processes.—Throughout Mexico. The following is selected as the TYPE of this species. PUEBLA: vicinity of Puebla, *Bro. Nicolas*, no. 5203, with seeds (hb. Gray, hb. Mo. Bot. Gard.). The following, although frequently without good seeds, are referred here. CHIHUAHUA: in the Sierra Madre, near Colonia Garcia, *C. H. T. Townsend & C. M. Barber*, no. 70 (hb. N. Y. Bot. Gard., hb. Mo. Bot. Gard., hb. U. S. Nat. Mus., hb. Gray). VERA CRUZ: near Santa Fé, *J. N. Rose & Robert Hay*, no. 5374 (hb. U. S. Nat. Mus.). JALISCO: Tapalpa, *Marcus E. Jones*, no. 469 (hb. U. S. Nat. Mus., hb. Mo. Bot. Gard.). MEXICO: near Tultenango, *J. N. Rose & Robert Hay*, no. 5442 (hb. U. S. Nat. Mus.); Valley of Mexico, Pedregal near San Angel, *J. N. Rose & Walter Hough*, no. 4510 (hb. U. S. Nat. Mus.). MORELOS: Cuernavaca, *Chas. C. Deam*, no. 44 (hb. Gray). PUEBLA: vicinity of Puebla, *Bro. G. Arsène*, no. 1138 (hb. Gray, hb. Mo. Bot. Gard., hb. N. Y. Bot. Gard.). LOCALITY UNKNOWN: one sheet with very good seeds in the Gray herbarium.

This material was distributed mostly as *H. breviscapa* HBK. or sometimes as *H. decumbens* L.

13. H. HUMILIS HBK. Corm globose to subcylindric, 5–11 mm. thick, covered with brownish membranous or fibrillous sheaths; leaves linear, canaliculate and densely pilose, 0.8–2.8 mm. broad, up to 3.5 dm. long; peduncles filiform, pilose, 1–18 cm. long, 1–2-flowered; ovary and capsule densely pilose; perianth-segments narrowly elliptic, 3–5 mm. long; capsule subglobose, 3–6 mm. long; seeds 0.8–1.1 mm. in diameter, brown, the outer coat covered with numerous, firm, sharp-pointed murications; the beak and hilum small and black. —Nov. Gen. et. Sp. Pl. i. 286 (1815). *Niobea pratensis* Willd. ex Schultes, Syst. Veg. vii. 762 (1830).—Fields in Mexico and South America. The following are referred here. HIDALGO: *Dr. Coulter*,[1] nos. 1546 and 1565, with seeds (hb. Gray). CHIAPAS: *C. A. Purpus*, no. 6966, with seeds (hb. Gray, hb. N. Y. Bot. Gard.). COLOMBIA: southwest of Las Cruces, Bogotá, altitude 2600–2700 m. (7931–8236

[1] According to Hemsley in *Biologia Centrali-Americana, Botany*, iv. Dr. Thomas Coulter "collected in California from 1831–1833, and then in Sonora . . . He also collected largely in Zimapan and Real del Monte, where he was Surgeon to one of the Mining Companies; but this appears to have been previous to his visit to California. His collection went to Trinity College, Dublin . . After Coulter's death in 1843, Harvey distributed the duplicates of the collection, and the first set is at Kew." Since the two specimens in the Gray Herbarium do not seem like other north Mexican species probably they came from either Zimapan or Real del Monte both of which are in the state of Hidalgo.

ft.), *F. W. Pennell,* no. 2163, with seeds (hb. Gray, hb. N. Y. Bot. Gard.); plateau de Sta. Fé de Bogotá, 1861, ex herb. Parseval-Grandmaison, with seeds (hb. Gray.). EUCADOR: Quitensian Andes, *J. P. Couthouy,* 1855 (hb. Gray). BOLIVIA: *Miguel Bang,* no. 1793, with seeds (hb. N. Y. Bot. Gard., hb. Mo. Bot. Gard., hb. Gray, hb. U. S. Nat. Mus.); *G. Mandon,* no. 1208, with seeds (hb. Gray, hb. N. Y. Bot. Gard.). ARGENTINA: *F. Kurtz,* no. 8386, with seeds (hb. N. Y. Bot. Gard.).

This material was distributed as *H. decumbens* L., *H. pusilla* HBK., and *H. humilis* HBK.

14. H. MEXICANA Schultes. Corm globose to subcylindric, 3–12 mm. thick, the membranous bases of the old leaves frequently forming somewhat fibrillous tufts; leaves linear-lanceolate, pilose, 1.2–4 mm. broad, up to 3.2 dm. long; peduncles filiform, canaliculate, densely pilose above, glabrescent below, 1.5–18 cm. long, 1–several-flowered; ovary and capsule densely pilose; perianth-segments linear or narrowly elliptic, 3–8 mm. long; capsule globose to subcylindric, 2.5–15 mm. long; seeds 0.8–1.1 mm. in diameter; the outer coat brown, muricate, with long, sharp processes, irregularly exfoliating in patches showing the black coat beneath; the beak and hilum prominent and black.—Schultes in Roemer and Schultes, Syst. Veg. vii. 761 (1830). —Along the bases of the mountain ranges of Mexico, northward into Arizona. The following are referred here. VERA CRUZ: near Santa Fé, *J. N. Rose & Jos. H. Painter,* no. 6522, without seeds (hb. U. S. Nat. Mus.); Orizaba, ex herb. Mus. Paris, no. 2830, without seeds (hb. Gray). TLAXCALA: Contadero, *J. N. Rose & Robert Hay,* no. 5967, without seeds (hb. U. S. Nat. Mus.). MEXICO: near Toluca, *J. N. Rose & Jos. H. Painter,* no. 6776, with seeds (hb. U. S. Nat. Mus.); Cima, *J. N. Rose & Jos. H. Painter,* no. 7187, without seeds (hb. U. S. Nat. Mus.); near Eslava, lava beds, altitude 2440 m. (8000 feet), *Rusby,* no. 339, with seeds (hb. N. Y. Bot. Gard.); near Eslava, *J. N. Rose & Jos. H. Painter,* no. 7140, with seeds (hb. U. S. Nat. Mus.); on Popocatepetl, *J. N. Rose & Robert Hay,* no. 6307, with seeds (hb. U. S. Nat. Mus.); Amecameca, *C. A. Purpus,* no. 1834, with seeds (hb. U. S. Nat. Mus., hb. Mo. Bot. Gard., hb. Gray). HIDALGO: between Pachuca and Real del Monte, *J. N. Rose & Jos. H. Painter,* no. 6683, with seeds (hb. U. S. Nat. Mus.); between Somoriel and Las Lajas, *J. N. Rose & Jos. H. Painter,* no. 9219, without seeds (hb. U. S. Nat. Mus.). SINALOA: in the foothills of the Sierra Madre, near Colomas, *J. N. Rose,* no. 1655, with seeds (hb. U. S. Nat. Mus.). CHIHUAHUA: damp places, pine plains, base of the Sierra Madre, *C. G. Pringle,* no. 1380, with seeds (hb. N. Y. Bot. Gard., hb. U. S. Nat. Mus., nos. 932928 and 36590, hb. Gray, hb. Phil. Acad.); near Colonia Garcia, *E. W. Nelson,* no. 6127, with seeds (hb. U. S. Nat. Mus.). ARIZONA: near Fort Huachuca at Tanner's Cañon, in sod, *Lemmon,* no. 2891, with seeds (hb. Gray);

Huachuca Mts., *J. G. Lemmon & wife,* with seeds (hb. U. S. Nat. Mus.).

This material was distributed as *H. decumbens* L.

Fig. 13. H. mexicana and seed (left).
H. catamarcensis and seed (right).

15. **H. catamarcensis**, n. sp., cormo subgloboso vel subcylindrato 5–9 mm. crasso vaginis membranaceis brunneis et saepe fibrillatis investo; foliis lineari-lanceolatis 1–3 mm. latis 1–1.9 dm. longis, pilosis; pedunculis filiformibus laxe adscendentibus vel recurvantibus 3.5–5 cm. longis, villosis praesertim ad apicem, uni- vel pauci-floris; ovario capsulaque sparse pilosis; segmentis perianthii lanceolatis ellipticis 3–5 mm. longis; pedicellis 3–6 mm. longis; capsulis subcylin-

dratis vel paullo ellipsoideis plerumque subglabris maturitate 4–6 mm. longis; seminibus 0.8–1 mm. diametro atris, partim parvis naevis testae brunneae investis.

Corm subglobose to subcylindric, 5–9 mm. thick, covered with membranous and often fibrillous brown sheaths; leaves linear-lanceolate, 1–3 mm. broad, 1–1.9 dm. long, pilose; peduncles filiform, loosely ascending or recurving, 3.5–5 cm. long, villous especially above, 1–few-flowered; ovary and capsule sparsely pilose; perianth-segments lanceolate, elliptic, 3–5 mm. long; pedicels 3–6 mm. long; capsule subcylindric or ellipsoid, usually rather glabrate at maturity, 4–6 mm. long; seeds 0.8–1 mm. in diameter, black, partially covered with small patches of a brown outer coat.—In northern Argentina. The following is referred here as the TYPE of this species. CATAMARCA: from the department of Andalgalá, *P. Jörgensen*, no. 1551, with seeds (hb. Gray, hb. U. S. Nat. Mus., hb. Mo. Bot. Gard.).

It was distributed as *H. decumbens* L.

(To be continued).

FURTHER NOTES ON THE PLANTS OF ISLE AU HAUT.—The following plants, collected on Isle au Haut, Knox County, Maine, during the past two years, deserve record. Let me acknowledge my indebtedness to Prof. Fernald for their determination, and for note and comment on their distribution, the "quotes" being all his.

RUBUS ORARIUS Blanchard "heretofore known from York County, Me., and from Cape Cod, Mass." [RHODORA, xxiii. 268, where it is recorded from Digby County, Nova Scotia.]

RUBUS ARCUANS Fernald & St. John, Proc. Bost. Soc. Nat. Hist. xxxvi. 78, fig. 7 (1921). To this original record Prof. Fernald [RHODORA, xxiii. 272] has added other stations in Nova Scotia, and now on my specimen his comment is "first between Nova Scotia and Cape Cod."

RUBUS MULTISPINUS Blanchard. "First northeast of Plymouth Co., Mass." [For description see Torreya, vii. 7 (1907).]

ILEX GLABRA (L.) Gray. "First between Cape Ann and Nova Scotia." This grows in considerable quantity, fifty plants or more, in a swamp near the long pond.

BARTONIA VIRGINICA (L.) BSP. [Recorded from Mt. Desert in Rand & Redfield's Flora, p. 130.] I found only two plants in a moist cleft of rock on a lesser hill.

Bartonia paniculata (Michx.) Robinson, var. intermedia Fernald. "First between Nova Scotia and the Blue Hills, Mass." [Rhodora, xxiii. 287 (1921).] Only one small plant found, in the same swamp in which *Ilex glabra* grows. This Bartonia has been discussed in Rhodora under the name *B. iodandra*.—Nathaniel T. Kidder, Milton, Massachusetts.

A Station in Maine for Ilex verticillata, forma chrysocarpa.—Late in November of last year a young friend from Belgrade was coming to visit my school in Smithfield. Although only thirteen years of age this lad, Orel P. Stevens, has a very good knowledge of the flora and fauna of this vicinity and is a very close observer of nature. While still in Belgrade but not far from the line which separates the two towns, and the counties of Kennebec and Somerset, his keen eye, trained to detect anything unusual, discovered a shrub which looked "new." Upon investigation he decided it was of more than ordinary interest and brought some of the berry-laden branches to my school. I was interested at once and upon consulting the Manual decided it was the yellow-berried variety of the Black Alder, *Ilex verticillata*, forma *chrysocarpa*, Robinson, reported only from Georgetown, Massachusetts. A few days later I obtained some of the berries from the same shrub and sent specimens to the Gray Herbarium where the identification was verified. It is a pleasure to be able thus to report it from Maine.—Harriet A. Nye, Fairfield Center, Maine.

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EMILY FRANCES FLETCHER.

B. L. Robinson.

Emily Frances Fletcher, whose name has long been familiar to New England botanists through its frequent citation in local floras, died at her home in Westford, Massachusetts, April 13, 1923, in her 79th year. Born in the same town January 17, 1845 and educated at Westford Academy, she was early attracted by the plants and bird life of her region. To these she devoted much attention. The interest lasted through a long life, doubtless contributing much to her personal happiness, as did her observations to the botanical and ornithological records of the area covered by her activities.

Realizing the need of aid in the precise identification of her plants, she got into touch with that notable group of botanists of whom L. L. Dame, F. S. Collins, Dr. Thomas Morong, G. E. Davenport, Dr. C. W. Swan, C. W. Jenks, W. H. Manning, Dr. F. Nickerson and Mrs. P. D. Richards were leading spirits. These persons, busy in very different callings, were amateurs in the best sense, so far as their botanical work was concerned. Many of them were associated in the Middlesex Institute about 1881, and the preparation of a county flora became one of their earnest ambitions.

This aim was realized when, after some years of preparation, the Flora of Middlesex County was published by Dame & Collins in 1888. In the preface of the work the name of Miss Emily F. Fletcher appears with those to whom thanks are extended for helpful co-operation.

One of the particular difficulties in the preparation of the Middlesex Flora lay in the fact that certain portions of its territory were the seats of the woolen industry. About these, wool-waste was frequently used as a fertilizer, introducing many plants from very remote regions,

often species of difficulty since their geographic origin was unknown and their persistence usually very slight, many of them lasting only for a season or two, and often being found only at stages in their development not showing the characters for ready identification.

Westford was one of the towns where there were woolen mills and where wool-waste was thus used. Miss Fletcher, in consequence, found from time to time plants not present in any manual available to her and began to turn to the Gray Herbarium for aid in their identification. The determination of her plants often required much time-consuming search and critical attention, but the specimens were always welcomed as examples of "waifs" and "casuals" that must be reckoned with in any close local flora work.

Stimulated by success in finding several of these plants which proved to be of particular interest because introduced from widely remote parts of the world, Miss Fletcher for many years devoted special attention to wool-waste collecting, and met with much success. With the possible exceptions of the Rev. W. P. Alcott and Dr. Swan, she probably accomplished as much as any one in New England in this specialty.

Miss Fletcher left her botanical collection to the Gray Herbarium where it has recently been deposited by her executor. It includes 630 sheets, well prepared and carefully mounted. The plants are nearly all from Westford and, of course, noteworthy among them are specimens of her unusual "finds" on wool-waste.

Miss Fletcher left to the New England Botanical Club her copiously annotated copy of the Middlesex Flora, a work in the preparation of which her services were, as we have seen, very helpful.

In the noteworthy attempt to record the plants of the Boston District in a series of articles under the editorship of Messrs. Knowlton and Deane, which have long been running in our journal, Miss Fletcher's specimens are frequently cited, often being the only representatives of her region. Indeed she has in some cases been the sole New England collector of the species in question.

She has herself been an occasional contributor to our journal but in general, through great modesty, was reluctant to write for publication, preferring to have her plants recorded by others. In her own words she wished to be regarded as "an observer, not a botanist."

With the death of Miss Fletcher there passed from New England botany a devoted personality, notable for loyalty to a limited field of observation in which she attained unusual results.

CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD UNIVERSITY.

New Series.—No. LXIX.

A. Brackett.

(*Continued from page 147.*)

LIST OF EXSICCATAE (Hypoxis).

A. P. Anderson.
1265 hirsuta (L.) Coville.
L. Andrews.
487 hirsuta (L.) Coville.
Arsène.
1138 fibrata Brackett.
C. C. Bachman.
2120 hirsuta (L.) Coville.
S. M. Bain.
231 hirsuta (L.) Coville.
Miguel Bang.
1042 breviscapa HBK.
1793 humilis HBK.
G. Baur.
239 decumbens L.
W. Beach.
121 hirsuta (L.) Coville.
Berlandier.
1832 hirsuta (L.) Coville.
Biltmore Herbarium.
529 hirsuta (L.) Coville.
529[a] hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
529[b] hirsuta (L.) Coville.
529[c] " " "
529[d] hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
529[e] hirsuta (L.) Coville.
529[f] " " "
2527[a] juncea Smith.
2527[c] " "
2527[d] " "
2527[e] " "
4015 hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
O. W. Blakley.
1408 hirsuta (L.) Coville.
3433 " " "
Botteri.
80 decumbens L., var. major Seubert.
455 decumbens L., var. major Seubert.
463 decumbens L., var. major Seubert.
Bourgeau.
2830 mexicana Schultes.
M. A. Brannon.
183 hirsuta (L.) Coville.
W. L. Bray.
68 rigida Chapman.
103 hirsuta (L.) Coville.
Britton.
2285 decumbens L.
Britton and Brace.
286 Wrightii (Baker) Brackett.
Britton, Britton and Cowell.
10062 Wrightii (Baker) Brackett.
Britton and Cowell.
208 decumbens L.
Britton, Britton and Earle.
6301 decumbens L.
Britton and Hazen.
24 decumbens L.
Britton and Hess.
2811 decumbens L.
Britton, Britton and Shafer.
102 juncea Smith.
Britton and Shafer.
279 decumbens L.
779 " "
Britton, Wilson and Selby.
14332 micrantha Pollard.
Broadway.
220 decumbens L.
4724 " "
Mr. and Mrs. H. I. Brown and F. C. Seymour.
1901 hirsuta (L.) Coville.
Bush.
55 hirsuta (L.) Coville.
295 " " "
316 " " "
385 hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
525 hirsuta (L.) Coville.
973 " " "
1441 " " "
1598 " " "
4237 " " "
J. J. Carter.
280 hirsuta (L.) Coville.
Bro. Leon and F. R. Cazanas.
5920 Wrightii (Baker) Brackett.

A. W. Chapman.
510 hirsuta (L.) Coville.
Clute.
208 decumbens L.
T. Coulter.
1546 humilis HBK.
1565 " "
J. F. Cowell.
521 decumbens L.
A. H. Curtiss.
2837* hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
2838 juncea Smith.
4167 " "
4573 " "
4727 hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
John Davis.
1231 hirsuta (L.) Coville.
3308 " " "
5156 " " "
6621 " " "
7283 " " "
7393 " " "
M. A. Day.
24 hirsuta (L.) Coville.
71 " " "
Deam.
44 fibrata Brackett.
L. H. Dewey.
205 hirsuta (L.) Coville.
R. A. Dixon and L. C. Gage.
679 hirsuta (L.) Coville.
Drummond.
342 hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
417 hirsuta (L.) Coville.
Père Duss.
2011 decumbens L.
3317[c] " "
Earle and Baker.
1490 hirsuta (L.) Coville.
Eggers.
615 decumbens L.
W. H. Emig.
324 hirsuta (L.) Coville.
Fendler.
1565 decumbens L., var. major Seub.
Fiebrig.
891 decumbens L., var. major Seubert.
5047 decumbens L.
5177 " "
B. Fink.
84 hirsuta (L.) Coville.
G. L. Fisher.
41 micrantha Pollard.
M. J. Fisher.
54 decumbens L.
W. C. Fishlock.
113 decumbens L.
Fredholm.
315 juncea Smith.
3138 decumbens L.
5010 juncea Smith.
6123 " "
6043 hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
Fuertes.
1704 decumbens L.
C. Gates.
1553.3 hirsuta (L.) Coville.
A. Gershoy.
778 hirsuta (L.) Coville.
G. Gardner.
133 decumbens L.
H. A. Gleason.
2281 hirsuta (L.) Coville.
P. Goll.
306 decumbens L.
Greenman.
100 hirsuta (L.) Coville.
550 " " "
2323 " " "
2329 " " "
3868 " " "
Greenman, Lansing and Dixon.
39 hirsuta (L.) Coville.
Hale.
169 hirsuta (L.) Coville.
E. Hall.
631 hirsuta (L.) Coville.
632 micrantha Pollard.
W. H. Haller.
829 hirsuta (L.) Coville.
R. M. Harper.
1268 hirsuta (L.) Coville.
1365 hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
1604 juncea Smith.
1880 hirsuta (L.) Coville.
W. Harris.
8589 decumbens L., var. major Seubert.
9100 decumbens L., var. major Seubert.
9401 decumbens L., var. major Seubert.
12059 decumbens L.
Hart.
366 decumbens L.
Hassler.
1178 decumbens L.
3245 " "
5562 " "
Mr. and Mrs. A. A. Heller.
182 decumbens L.
982[a] " "

Heyde and Lux.
2871 decumbens L.
2934 rugosperma Brackett.
Hitchcock.
343 juncea Smith.
Holm.
67 decumbens L.
House.
687 hirsuta (L.) Coville.
1984 " " "
2523 " " "
4157 " " "
5173 " " "
O. H. Howell.
653 hirsuta (L.) Coville.
Hus.
4107 hirsuta (L.) Coville.
M. E. Jones.
469 fibrata Brackett.
Jörgensen.
1551 catamarcensis Brackett.
J. R. Johnston.
36 decumbens L.
Kearney.
1035 hirsuta (L.) Coville.
1265 " " "
1378 " " "
J. H. Kellogg.
531 hirsuta (L.) Coville.
E. P. Killip.
3570 decumbens L.
A. F. K. Krout.
2837 hirsuta (L.) Coville.
F. Kurtz.
8386 humilis HBK.
Langlois.
332 rigida Chapman.
Lehmann.
7599 decumbens L.
Lemmon.
2891 mexicana Schultes.
Lighthipe.
470 juncea Smith.
Lindheimer.
185 hirsuta (L.) Coville, var leptocarpa (Engelm. & Gray) Brackett.
187 sessilis L.
188 hirsuta (L.) Coville, var leptocarpa (Engelm. & Gray) Brackett.
F. E. Lloyd.
579 decumbens L.
Bayard Long.
3444 hirsuta (L.) Coville.
3784 " " "
5904 " " "
6975 " " "
7177 " " "
Long and Brown.
148 hirsuta (L.) Coville.
3536 hirsuta (L.) Coville.
MacElwee.
308 hirsuta (L.) Coville.
J. Macoun.
13799 hirsuta (L.) Coville.
Mandon.
1208 humilis HBK.
Maxon.
798 decumbens L.
6139 hirsuta (L.) Coville.
Maxon and Standley.
96 hirsuta (L.) Coville.
McCarthy.
8 micrantha Pollard.
E. A. Means.
74 micrantha Pollard.
M. Meislahn.
1698 juncea Smith.
E. L. Morris.
210 hirsuta (L.) Coville.
J. R. Mumbauer.
407 hirsuta (L.) Coville.
Nash.
488 decumbens L.
789 juncea Smith.
952 " "
2072 " "
Nash and Taylor.
1183 decumbens L.
E. W. Nelson.
6127 mexicana Schultes.
G. E. Nichols.
69 decumbens L.
Nicolas.
5203 fibrata Brackett.
J. B. Norton.
165 hirsuta (L.) Coville.
L. B. Ohlinger.
599 juncea Smith.
J. H. Oyster.
3852 hirsuta (L.) Coville.
Edward Palmer.
232 decumbens L.
557 juncea Smith.
581 decumbens L., var. major Seubert.
E. J. Palmer.
694 hirsuta (L.) Coville.
695 " " "
1566 rigida Chapman.
5316 micrantha Pollard.
7380 " "
8519 hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
9357 hirsuta (L.) Coville.
9520 hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
13406 hirsuta (L.) Coville.
15114 " " "

E. L. Palmer.
322 hirsuta (L.) Coville.
Parry and Palmer.
871 potosina Brackett.
W. Palmer.
90 hirsuta (L.) Coville.
A. S. Pease.
12552 hirsuta (L.) Coville.
Pennell.
1346 hirsuta (L.) Coville.
2163 humilis HBK.
2552 hirsuta (L.) Coville.
2808 " " "
4998 " " "
Pennell and Long.
7812 hirsuta (L.) Coville.
Pollard.
21 hirsuta (L.) Coville.
200 " " "
Pollard and Maxon.
72 hirsuta (L.) Coville.
90 " " "
Pretz.
2971 hirsuta (L.) Coville.
3411 " " "
7097 " " "
10354 " " "
Pretz, Mattern and Long.
6556 hirsuta (L.) Coville.
Pringle.
1380 mexicana Schultes.
2908 rugosperma Brackett.
Purpus.
1834 mexicana Schultes.
6966 humilis HBK.
Redfield.
7933 hirsuta (L.) Coville.
7934 " " "
A. F. Regnell.
1237 decumbens L.
Reniech.
99 decumbens L.
Reverchon.
948 hirsuta (L.) Coville.
2759 rigida Chapman.
2759A hirsuta (L.) Coville.
2760 " " "
2760A " " "
2780 rigida Chapman.
4028 hirsuta (L.) Coville.
4038 " " "
9481 " " "
E. S. Reynolds.
067 hirsuta (L.) Coville.
Riehl.
126 hirsuta (L.) Coville.
B. L. Robinson.
176 sessilis L.
352 hirsuta (L.) Coville.
353 hirsuta (L.) Coville.
709 " " "
Rolfs.
255 juncea Smith.
Rose.
1655 mexicana Schultes.
3307 tepicensis Brackett.
3319 " "
Rose and Hay.
5374 fibrata Brackett.
5442 " "
5967 mexicana Schultes.
6142 decumbens L.
6307 mexicana Schultes.
Rose and Hough.
4326 decumbens L., var. major Seubert.
4510 fibrata Brackett.
Rose, Fitch and Russell.
3346 decumbens L.
Rose, Painter and Rose.
9219 mexicana Schultes.
Rose and Painter.
6522 mexicana Schultes.
6683 " "
6776 " "
7140 " "
7187 " "
7237 decumbens L.
Rugel.
132 sessilis L.
Rusby.
339 mexicana Schultes.
Ruth.
155 hirsuta (L.) Coville.
156 " " "
Rydberg.
8218 hirsuta (L.) Coville.
Safford.
80 hirsuta (L.) Coville.
B. F. Saurman.
7937 juncea Smith.
J. H. Schuette.
139 hirsuta (L.) Coville.
F. C. Seymour.
1157 hirsuta (L.) Coville.
Shafer.
3239 decumbens L.
W. C. Shannon.
4721 decumbens L.
Small and Small.
5028 Wrightii (Baker) Brackett.
Small and Wilson.
1871 micrantha Pollard.
J. D. Smith.
342 juncea Smith.
343 hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.

H. H. Smith.
2266 decumbens L., var. major Seubert.
H. H. Smith and G. W. Smith.
14 decumbens L.
U. C. Smith.
1405 hirsuta (L.) Coville.
M. P. Somes.
3067 hirsuta (L.) Coville.
Spruce.
5068 decumbens L.
J. P. Standley.
7 juncea Smith.
499 " "
P. C. Standley.
11381 hirsuta (L.) Coville.
12963 juncea Smith.
Standley and Bollman.
12097 hirsuta (L.) Coville.
L. D. Starr.
2817 hirsuta (L.) Coville.
A. Stewart.
1135 decumbens L.
W. Stone.
72 micrantha Pollard (in part).
Schaffner.
506 humilis HBK.
545 potosina Brackett.
Sintenis.
488 decumbens L.
1067 Wrightii (Baker) Brackett.
F. C. Straub.
52 juncea Smith.
A. A. Taylor.
71 Wrightii (Baker) Brackett.
Alexandrina Taylor.
4227 decumbens L.
Tonduz.
7280 decumbens L.
8028 " "
Townsend and Barber.
70 fibrata Brackett.
Tracy.
5090 rigida Chapman.
5091 " "
5092 " "
5093 " "
5095 micrantha Pollard.
6418 " "
6621 hirsuta (L.) Coville, var. leptocarpa (Engelm. & Gray) Brackett.
6866 juncea Smith.
7514 " "
9231 hirsuta (L.) Coville.
H. von Tuerckheim.
33 decumbens L., var. major Seubert.
3842 decumbens L., var. major Seubert.
Underwood and Griggs.
785 decumbens L.
956 " "
977 " "
L. F. Ward.
137 hirsuta (L.) Coville.
A. E. Wight.
271 Wrightii (Baker) Brackett.
T. Williams.
74 hirsuta (L.) Coville.
C. S. Williamson.
103 hirsuta (L.) Coville.
1513 " " "
Percy Wilson.
347 decumbens L.
C. Wright.
1515 decumbens L.
3745 Wrightii (Baker) Brackett.
Wright, Parry and Brummel.
530 decumbens L.

II. SOME GENERA CLOSELY RELATED TO HYPOXIS.

Previous to 1762 the plants now known as *Hypoxis* were scattered among the genera *Anthericum, Crocus, Ornithogalum, Allium* etc. Linnaeus in the first edition of his *Species Plantarum* (1753) had thus distributed them but in his second edition (1762) he formed under *Hexandria Monogynia* the genus *Hypoxis* with four species. In his *Philosophia Botanica* (1751) he had proposed a fragment of a Natural System of classification and in Sprengel's edition of this work (1809) *Hypoxis* was added to the class *Coronariae.*

Jussieu in 1789 published his *Genera Plantarum* in which he proposed a system of classification supposed to be more natural than the one of Linnaeus because the whole structure of the plant was taken into

consideration. In this, under Class III *Perigyna,* Order VII *Narcissi* of his Monocotyledons, he placed the genus *Hypoxis.*

Robert Brown in his *Prodromus* (1810) formed the family *Amaryllideae* and under the heading "Genera inter Asphodeleas et Amaryllideas media" placed the genera *Hypoxis, Curculigo* Gaertner and *Campynema* Labillardière. Later in his *General Remarks on the Botany of Australia* (1814), he said, "it is better to consider *Curculigo* and *Hypoxis* as forming a separate family." This family he proposed to call the *Hypoxideae,* characterized by "*Perianthium* superum limbo sexpartito, regulari, aestivatione imbricata. *Stamina* sex, imis lacinis inserta. *Ovarium* 3-loc. loculis polyspermis. *Capsula* evalvis, nunc baccata, polysperma. Semina umbilico laterali rostelliformi: testa atra crustacea. *Embryo* in axi albuminis carnosi: radicula vaga."

Curculigo was described by Gaertner in 1788 with the species *C. orchioides,* a plant which had previously been considered an orchid. Jussieu in 1789 made no mention of this new genus but later Robert Brown classed it with *Hypoxis* as above stated.

Campynema was described by Labillardière (1804) as a new genus based upon a plant from Tasmania which he called *C. linearis.* Since it has a leafy stem and its seeds are very different from those of *Hypoxis* it seems unwise to place these two genera together.

John Lindley in his *Introduction to a Natural System of Botany* (1831) placed *Curculigo* and *Hypoxis* under the order *Hypoxideae.* Later in his *Natural System of Botany* (1836) he placed the *Hypoxideae* as a family under the order *Amaryllidaceae* and he said, "I give up the possibility of characterizing Hypoxideae as a distinct Order, for their occasionally rostellate seeds appear of no value as an ordinal distinction." All of the American species of *Hypoxis* and *Curculigo* have rostellate seeds and Baker says the Old World species of both likewise have them. So by including plants without rostellate seeds Lindley seems to have brought together some unrelated genera when he placed *Curculigo* including *Molineria* Colla, *Hypoxis* including *Fabrica* Thunberg and "*Caelanthus* Schlectendal" (originally published *Coelanthus* Willd.) under the family *Hypoxideae.*

Colla (1825) described *Molineria,* with *M. plicata* as type, and observed that it had been considered a *Curculigo* but that it differed from the latter in several respects. He listed the differences and also gave a figure of his plant. From his plate and from specimens of

similar appearance it seems that he over-estimated some of these differences. For instance, he stated that the seed of his plant is "inappendiculata . . . non rostratum," as is the seed of *Curculigo orchioides* which must be taken as the type for the genus *Curculigo*. Nevertheless, when a *Molineria* seed is seen under a microscope the beak and rostrate hilum are clearly discernible. They are obscured to the unaided eye by the uneven contour of the whole seed.

Coelanthus has the flowers in racemes, a superior ovary and is generally referred to the genus *Lachenalia* of the *Liliaceae*.

In 1847 in his *Vegetable Kingdom* under the alliance *Nacissales* Lindley again made the *Hypoxidaceae* a separate order, between the *Haemodoraceae* and the *Amaryllidaceae*. He characterized it by "Flowers hexapetaloideous, much imbricated. Stamens 6; anthers turned inwards. Radicle remote from the hilum, which is often strophiolate." Under this order he placed the genera *Curculigo, Forbesia* Ecklon, *Pauridia* Harvey and *Hypoxis*. This time he put "*Coelanthus* W." among the *Liliaceae*.

I have been unable to see Ecklon's description of *Forbesia* but later botanists have included it under *Curculigo* and Baker, who also did this, stated that the seeds of *Curculigo* are rostellate.

William Herbert (1837) placed the *Hypoxideae* as a suborder under his caulescent *Amaryllidaceae*. This suborder he divided further, and under his division *Hypoxidiformes*, characterized by "sepals and petals conformable," he placed the genera ? *Weldenia* Schultes fil., *Curculigo, Molineria, Hypoxis* and *Coelanthus*.

Weldenia has been placed since in the *Commelinaceae* which it resembles in habit and leaves.

In his *Flora Australiensis* (1873) Bentham formed the order *Amaryllideae* characterized by "Flowers regular or nearly so. Anthers opening inwards. Placentas axile. Seeds albuminous. Inflorescence centripetal. Leaves chiefly radical, veinlets when present transverse." He distinguished five tribes, *Haemodoreae, Conostyleae, Hypoxideae, Agaveae* and *Euamaryllideae*. He said, "The several tribes here distinguished are usually considered as so many independent Orders, or at any rate as referrible to three distinct Orders—*Haemodoraceae, Hypoxideae*, and *Amaryllideae*; but although these subordinate groups are in most respects distinct, it appears to me that it is only by their union in one general Order that we can obtain a

well-defined group, of the same grade as *Irideae, Burmanniaceae, Orchideae, Scitamineae* and *Hydrocharideae,* all of them clearly marked out by definite and important characters. It is generally admitted that the above suborders, here united under the *Amaryllideae,* agree in the most important characters derived from the flower and seed, differing from *Hydrocharideae, Orchideae* and *Burmanniaceae* in their albuminous seeds, from *Scitamineae* and *Orchideae* in their regular (or only oblique) flowers, from *Irideae* and *Burmanniaceae* in their centripetal (not centrifugal) inflorescence and in their stamens, from *Taccaceae* and the majority of *Orchideae* and *Burmanniaceae* in their axile placentum, from *Dioscorideae* in their hermaphrodite flower, and in all cases there are other characters either less constant or of minor importance . . . Taking therefore the *Amaryllideae* as a whole as one Order, it would include besides the five tribes or suborders here enumerated . . . the *Vellozieae* . . . and the *Alstroemierieae* . . . in which however the secondary inflorescence appears to be centrifugal." Under the tribe Hypoxideae he placed *Hypoxis* and *Curculigo.*

Bentham and Hooker in their *Genera Plantarum* (1883) made some changes in the five tribes of Bentham. These tribes they called *Hypoxideae, Amarylleae, Alstroemierieae, Agaveae* and *Vellosieae.* Under the *Hypoxideae* they placed the genera ? *Campynema,* ? *Pauridia, Hypoxis* and *Curculigo.*

Pax, writing in Engler and Prantl's *Die natürlichen Pflanzenfamilien* (1887), placed under the family *Amaryllidaceae* the subfamily *Hypoxidoideae,* and under the latter he placed the tribe *Hypoxideae,* containing the genera *Curculigo* and *Hyporis.* He placed *Campynema* in a subfamily by itself parallel to the *Hypoxidoideae*; and *Pauridia* under the *Haemodoraceae* with the comment, that while Bentham and Hooker are not certain that it belongs in the *Amaryllidaceae,* neither is it certain that it is any better placed in the *Haemodoraceae.* The reason for all this uncertainty lies in the fact that while the plant has the habit and seeds of a tiny *Hypoxis* it has only three stamens.

Baker, in his *Synopsis of the Hypoxidaceae* (1878), followed the plan of Bentham and made the *Hypoxidaceae* a tribe of the *Amaryllidaceae.* Here he collected four genera *Hypoxis, Curculigo, Molineria* and *Pauridia,* which he characterized in the following manner:—

FIG. 14. Curculigo scorzoneraefolia.

"CLAVIS GENERUM.

**Perianthii tubus supra ovarium nullus vel brevissimus. Stamina epigyna.*

1. HYPOXIS. Fructus capsularis circumcissus operculatus. Folia sessilia haud plicata . . .

2. MOLINERIA. Fructus baccatus. Folia petiolata plicata . .

**Perianthii tubus supra ovarium productus. Stamina perigyna.*

3. CURCULIGO. Tubus elongatus filiformis. Stamina 6 . . .

4. PAURIDIA. Tubus brevis infundibularis. Stamina 3 . . ."

These four genera have small, dark seeds, with a crustaceous outer coat and a beak and lateral rostrate hilum. Judging from the similarity of their seeds they should be classed together under the *Hypoxideae.* The seeds of this group are very different from those of the other *Amaryllidaceae* that I have examined and also from those of the neighboring families. However, my study has not been extensive enough to warrant removing the *Hypoxideae* from the *Amaryllidaceae.*

I am including a description and figures (habit × ½, seed × 40) of the American species of *Curculigo*; and also drawings (habit × ½, seed × 40) of the monotypic *Pauridia minuta* which appears to have

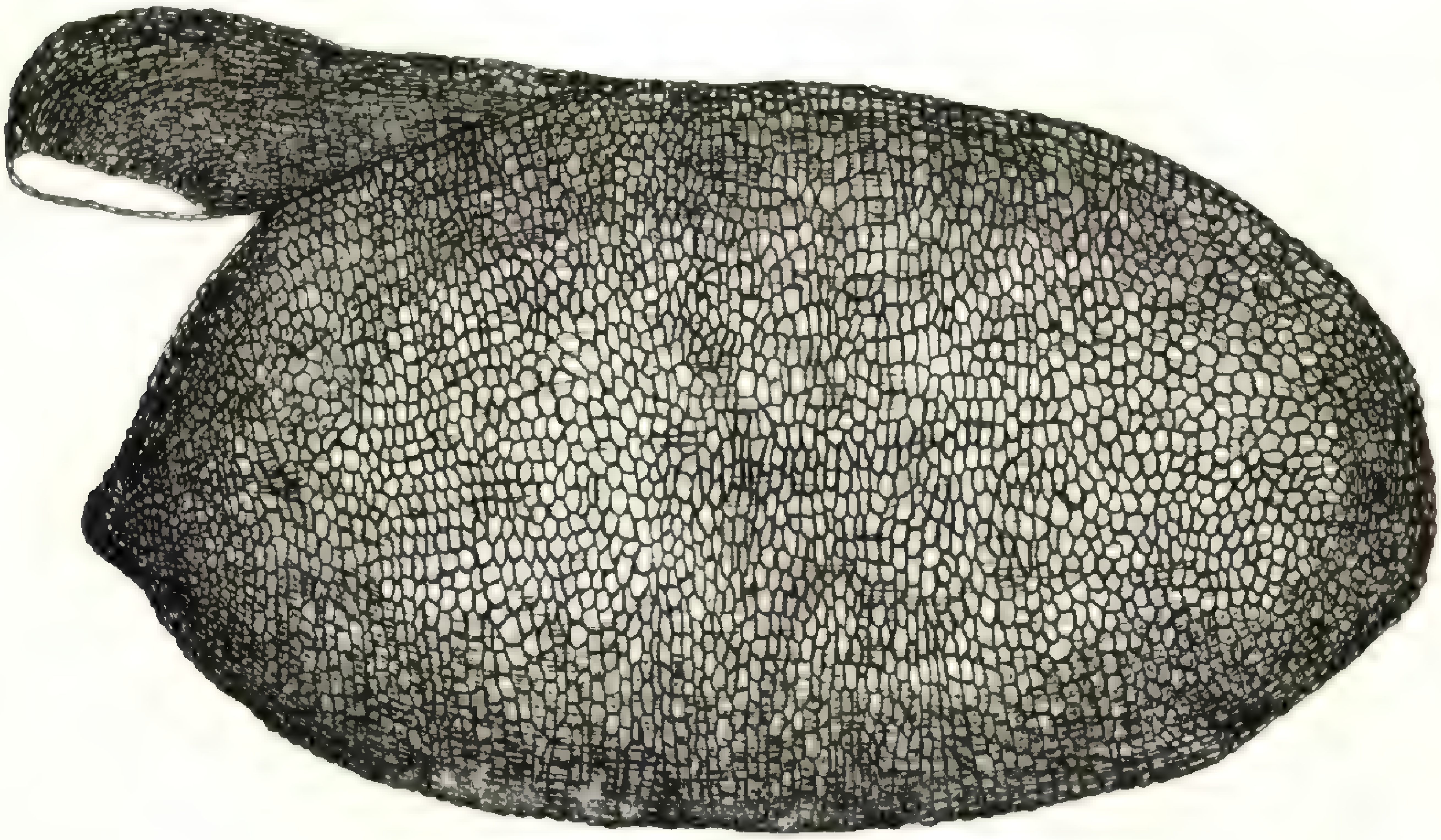

Fig. 15. Seed of Curculigo scorzoneraefolia.

a miniature *Hypoxis* seed. I also include figures (habit × ⅛, seed × 40) of *Molineria recurvata* (Ait. f.) Herbert (this is Colla's *M. plicata* renamed according to the international rules) to show that it is unlike *Curculigo* and while the seed appears to the unaided eye be "inappendiculata" it has really, when seen under even a low powered glass, the beak and rostrate hilum of the *Hypoxideae.*

Curculigo scorzoneraefolia (Lam.) Baker. Tuber cylindrical 2.5–above 8 cm. long, about 8 mm. thick, crowned with a tuft of fibers and the disintegrating membranous sheaths of the old leaf-bases; leaves pilose, linear to lanceolate, 1.5–14 mm. broad, 1–3.5 dm. long; in the broader-leaved plants the leaves narrowed to a petiolar base; scapes mostly one-flowered, 5–8.5 cm. long; pedicels very short, scarcely protruding from the tuft of basal fibers; bracts lanceolate, leaf-like, about 2 cm. long; ovary cylindrical when mature,

sheathed by the bracts and the whole encased by the basal fibers; perianth-tube filiform, 2–4 cm. long, pilose, crowned by the six spreading perianth-segments; perianth-segments lanceolate, 0.7–1.4 cm. long, pilose without; capsule indehiscent, cylindrical, subtended by the persistent bracts; seeds black, lustrous, subglobose, 2–2.5 mm. in diameter, with a small beak and a much expanded hilum.—Baker in Journ. Linn. Soc. xvii. 124 (1878). *Hypoxis scorzoneraefolia* Lamarck, Encyc. iii. 183 (1789).—Tropical and subtropical South America and the Antilles.

The accompanying drawings were made from a plant in the Gray Herbarium, collected by *R. Spruce* in the vicinity of Barra, Prov. Rio Negro, Brazil, Dec.–Mar., 1850–1851. Plants belonging to this species have mostly been distributed as *Hypoxis scorzoneraefolia* or as *Hypoxis decumbens* L. The leaves of this species are narrower and more grass-like than are those of most of the Old World Curculigos; yet the seed is as typically that of a *Curculigo* as in *C. orchioides* Gaertner around which the genus was described.

Pauridia minuta (L. f.) Durand & Schinz. Corm globose, 4–8 mm. thick, covered with membranaceous sheaths and the stiff bristly bases of the old leaves; leaves filiform to linear-lanceolate, 0.4–3.6 mm. broad, up to 3.5 cm. long; scapes 1(rarely 2)-flowered; pedicels longer than the peduncles and subtended by two setaceous bracts; ovary and capsule glabrous; perianth-segments 2–3.6 mm. long, lanceolate, slightly rounded at the apex; capsule subcylindric, 2–3 mm. long; seeds 0.1–0.2 mm. in diameter, black, lustrous, covered with minute rounded pebbling, making the seeds resemble a miniature seed of *Hypoxis hirsuta*, var. *leptocarpa*.—Consp. Fl. Afr. v. 142 (1895). *Ixia minuta* L. f. Suppl. 92 (1781); Thunb. Diss. Ixia. 6, t. 1, f. 1 (1783). *P. hypoxidioides* Harvey, Gen. S. Afr. Pl. 342 (1838).—About Cape Town, S. Africa. The following are cited here from near Cape Town; *Mac Owan & Bolus*, no. 291, with seeds (hb. Gray); *H. Bolus*, no. 2815, without seeds (hb. Gray).

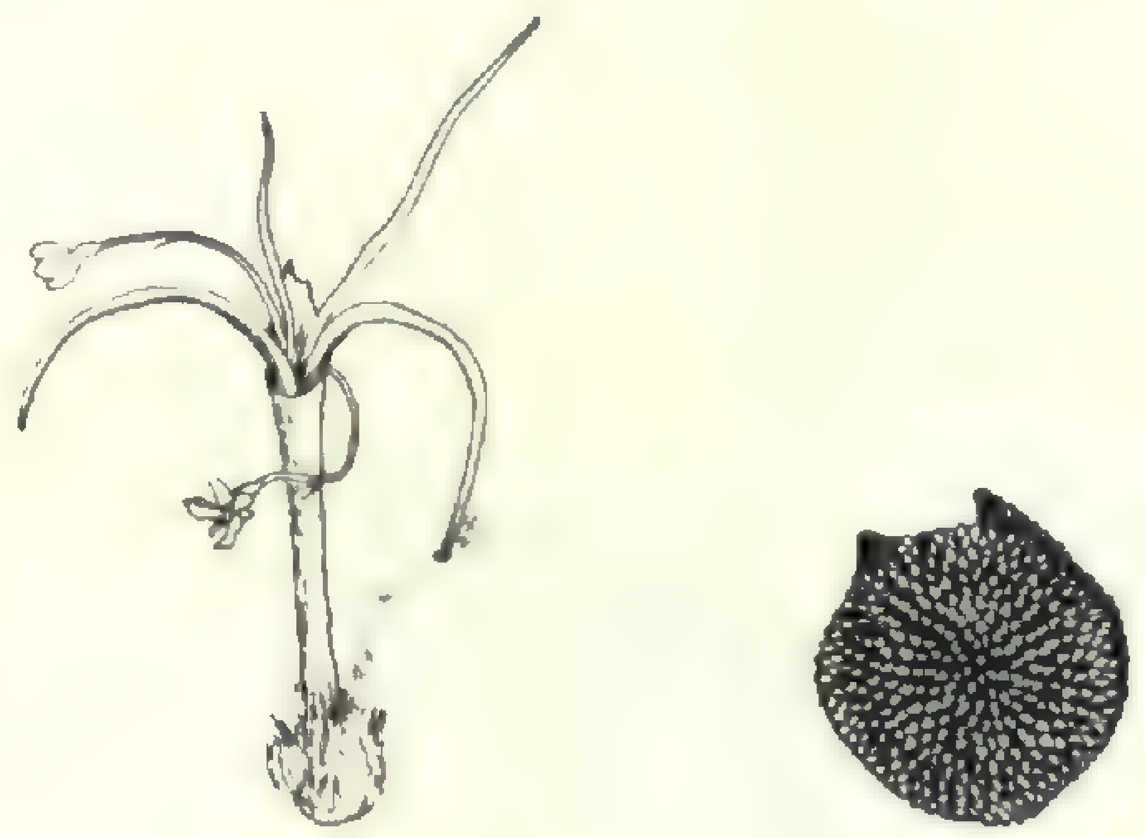

Fig. 16. Pauridia minuta and seed.

Molineria recurvata (Ait. f.) Herbert. Tuber cylindrical, covered with the dark disintegrating sheaths of the old leaf-bases; leaves obovate, about 11 dm. long, about 8–13 cm. broad; the lower part narrowed at the base to form a petiole, densely villous when young, becoming glabrate at maturity; blade glabrate, acute; scapes about 2–3 dm. long, villous, bearing flowers and bracts in an oblong

deflexed head; pedicels about 7–16 mm. long; bracts leaf-like, villous at the apical margins; ovary and capsule cylindrical or subglobose;

FIG. 17. Molineria recurvata and seed.

perianth-segments linear-lanceolate, about 7 mm. long, pilose without; capsules indehiscent, 6–12 mm. long, cylindrical, subtended by

the persistent bracts which exceed the combined pedicel and mature capsule in length; seeds black, globose, about 2 mm. in diameter, with uneven contour; murications small, low and flat.—Amaryllideae 84 (1837). *Curculigo recurvata* Aiton f. Hort. Kew. ed. 2, ii. 253 (1811); Bot. Reg. ix. t. 770 (1823). *Molineria plicata* Colla, Hort. Rip. App. ii. 331, t. 18 (1825).—Tropical Asia, Australia and the Philippine Islands.

The drawing of this seed was made from specimen no. 18196, distributed by *A. D. E. Elmer*, and now in the Gray herbarium. It was collected in Los Baños (Mt. Maquiling), Province of Laguna, Island of Luzon, June–July, 1917. *Molineria* has been very often confused with *Curculigo* and the specimens have been distributed as *C. recurvata*, *C. gracilis* Kurz and *C. aquasanensis* Elmer.

NOTE ON PORIA FATISCENS.

James R. Weir.

In a recent comparison of the types of some Porias described from North America, it was determined that the synonymy of *Poria fatiscens* is as follows:

Poria fatiscens (Berk. & Rav.) Cke. Grev. **14**: 114, 1886.

Polyporus fatiscens (Berk. & Rav.) in Berk. Grev. **1**: 65. 1872. Type from South Carolina by Ravenel on dead branches (Rav. Fung. Car. Fasc. 2: No. 21.) Type preserved. Kew, Cambridge, Mass. (Curtis Herb.); Washington (Rav. Fung. Car. and Michener Herb.).

Polyporus tenellus Berk. & Cke; Cooke & Ellis Grev. **6**: 81. 1878. Type from Newfield, N. J., by Ellis on pine boards, preserved, New York (Ellis Herb. no. 1825); Ellis, N. A. F. no. 804. Langlois, no. 433 under this name (Herb. U. S. D. A.) is *Poria vesiculosa* (Berk. & Curt.) Cke.

Polyporus semitinctus Peck, Ann. Rept. N. Y. State Mus. **37**: 37. 1879. Type from Griffins, N. Y., by Peck on wood of *Acer*, preserved at Albany (Peck Herb.).

Poria tenella (Berk. & Cke.) Cke. Grev. **14**: 114. 1886.

Poria semitincta (Pk.) Cke. Grev. **14**: 115. 1886.

Poria subviolacea Ellis & Ev. Amer. Nat. **31**: 339. 1897. Type from Newfield, N. J., by Ellis, on oak branches, preserved, New York (Ellis Herb.) Cambridge (Farlow Herb.), Ellis N. A. F. 3513, 2d Ser.

Characters:—Sporophore resupinate, extensively effused under favorable conditions in orbicular or elongated patches 2–15 cm. long and 3–9 cm. broad, soft membranaceous, somewhat pulverulent

when old; margin usually conspicuous, soft, separable, flocculent, sterile, white or tinged with violet, byssoid, sometimes forming conspicuous branched rhizomorphic stands which may extend into the interstices of the substratum; subiculum thin, separable, white, with a distinct violet color when fresh, color reflecting through rifts in the pores or showing at their junction with the sterile margin; pores formed by indentation of a common fertile surface, at first circular, punctiform, later more definitely defined becoming angular or oblique, shallow, 2–4 per mm., whitish when young, becoming yellowish or cream color when mature; folds thin; edges entire, becoming uneven or dentate in some specimens; basidia four-spored, clavate 2.5–4 × 10–15 μ, varying in size, several originating from a common base, occasionally branched continuous over the edges of the folds until separated by fracture; spores hyaline, entire, broadly or oblong elliptical, sometimes flattened on one side, average (50) 1.2–2 × 3–4.2 μ; encrusted cystidia near the edges of the folds, sometimes absent; tramal hyphae extensively branched, frequently at right angles, conspicuously septate, rarely nodose-septate, loosely interwoven but more compact in a narrow subhymenial zone, conspicuously encrusted when mature, 3–4 μ in diameter; subicular hyphae occasionally encrusted next the substratum, conspicuously septate, occasionally with pseudo-clamp connections, 3–6 μ in diameter.

Substrata: On wood and bark of *Pinus, Juniperus, Picea, Tsuga, Taxus, Quercus* and *Acer*. The species does not show any marked proclivity for coniferous or frondose wood. The species has been found rotting old lumber piles. Decay, white or light yellow, soft and spongy; in later stages the wood becomes fibrillose shrinking unequally so that minute pit-like cavities are discernible. This is more pronounced in coniferous wood.

Ellis collected this species in abundance on pine boards and other substrata at Newfield, N. J., and judging from his correspondence now preserved at the New York Botanical Garden, he was much interested in its determination. Some of this material was referred by Ellis to Cooke with the inquiry whether it was *Polyporus tenellus* Berk. & Cke. Cooke definitely stated "that called *P. tenellus* must surely be *Polyporus farinellus* Fr." This view was concurred in by Ellis, who remarks that his "opinion is based on an examination of the original specimen of *P. tenellus* in my herbarium No. 1825." This was, of course, true, for the latter, but authentic material of *P. farinellus* represents an entirely different species. Ellis goes on to say: "As near as I can remember, No. 1825 was violet color when fresh; No. 1828, which appears to be the same, was certainly so." Ellis repeatedly refers to the violet color of his specimens. An unnumbered specimen on *Quercus* in Herb. N. Y. Bot. Gard., he

refers to *Merulius bellus* B. & C., which shows some advance in his knowledge of the morphology of the species. However, as late as 1897, he collected additional material at Newfield and described it as new.

Specimens Examined.

Exsiccati: Ravenel, Fung. Am. 428 in U. S. D. A. copy: Ravenel, Fung. Car. Fasc. **2**: 21; Ellis N. A. F. 2d Ser. 804, 3513, 1712 (part of same collection used by Ravenel).

District of Columbia: Washington, Rock Creek Park, *J. R. Weir* (19070), on bark of *Fagus;* Washington, Rock Creek Park (22289), on bark of *Quercus.*

Florida: *W. W. Calkins* (Florida Fungi) under *P. tenellus* and *P. fatiscens* later duplicate of former (U. S. D. A. Herb.) on *Quercus.*

Indiana: Scottsburg, *J. R. Weir* (22275), on bark of *Quercus alba.*

New Jersey: Newfield, *J. B. Ellis* 1825, type of *Polyporus tenellus* (in Ellis Herb.) on pine boards; Newfield, *J. B. Ellis,* Ellis N. A. F. 3513, 2d Ser., type of *Poria subviolacea*; Newfield, *J. B. Ellis,* N. A. F. 804, on pine and cedar wood; Newfield, *J. B. Ellis* (in Ellis Herb. and in Farlow Herb. under *P. farinella*) on bark and leaves of *Quercus*; *L. M. Underwood,* Oct., 1905, reported under *Poria incerta* (Pers.) Murr. in Myc. **12**: 79, 1920 (N. Y. Bot. Garden Herb.) on bark of juniper.

New York: Griffins, *C. H. Peck,* type of *Polyporus semitincta* (in Peck Herb.) on wood of *Acer,* the type is mostly in an undeveloped state; Lindenville, *C. H. Peck* (in Peck Herb.).

Maine: Kittery Point, *R. Thaxter* (22266), on bark of *Quercus.*

Michigan: Frankfort, *E. T. Harper* (2220), on bark of deciduous tree.

Rhode Island: Providence, *J. F. Collins* (22214), on bark of *Quercus.*

South Carolina: Aiken, *H. W. Ravenel,* in Ravenel Fung. Amer., 428, on pine boards referred by Burt to *Merulius bellus* B. & C. No. 1712 N. A. F. 2d Series is a part of the same collection; Ravenel Fung. Car. Fasc. 2: no. 21, type of *Polyporus fatiscens,* on dead branches; *Ravenel* 1372 in part (Curtis Herb.)

Vermont: Bethel, *P. Spaulding* (22300), on *Quercus.*

Virginia: Clarendon, *J. R. Weir* (22225), on bark of *Quercus*; Mt. Vernon, *J. R. Weir* (30535), on bark of *Taxus baccata*; Great Falls, *J. R. Weir* (30583), on wood and bark of *Juniperus virginiana.*

Office of Investigations in Forest Pathology,
Bureau of Plant Industry.
Washington, D. C.

LYCOPODIUM SABINAEFOLIUM AND L. SITCHENSE.

M. L. FERNALD.

LYCOPODIUM SABINAEFOLIUM Willd., var. **sitchense** (Rupr.), n. comb. *L. sitchense* Rupr. Beitr. Z. Pflanzenk. Russ. Reich. iii. 30 (1845).

When *L. sitchense* was first taken up[1] by recent American students as a species distinct from *L. sabinaefolium* comparatively little material was at hand, only 24 collections of the two being cited. Subsequently extensive field work has made these plants better known and the writer now has before him 121 sheets of the two; but with the accumulation of such a series of specimens, one third of the number collected by himself, he has gradually found the lines of demarcation between the two growing more and more obscure. In their extremes they are fairly marked, typical *L. sabinaefolium* having somewhat dorsiventral branchlets with the leaves 4-ranked and the free tips of the leaves usually shorter than the decurrent base; typical *L. sitchense* having essentially terete branchlets with the leaves 5-ranked and their free tips usually longer than the decurrent base. Too often, however, it is almost if not quite impossible to say into which series a given collection should be placed, the condition thus being comparable with that presented by *L. obscurum* L. and its var. *dendroideum* (Michx.) D. C. Eaton.

When they had only a few specimens Lloyd & Underwood were able to define *L. sitchense* as having "peduncles short (less than 1 cm.)" and *L. sabinaefolium* with "peduncles (1–5 cm. long . . .)." But 14 sheets,[2] which in foliage are typical *L. sitchense*, show slender peduncles 1.2–3 cm. long; while 7 sheets[3] with the dorsiventral branchlets of true *L. sabinaefolium* have some or all of the strobiles essentially sessile. It is a striking fact, but exactly what one would expect, that the plants of the more exposed habitats have the shortest ped-

[1] Lloyd & Underwood, Bull. Torr. Bot. Cl. xxvii. 162 (1900).

[2] Such, for instance, as: dry spruce woods, St. Jean l'Evangéliste, Nouvelle, Que., *Collins & Fernald*; dry sunny barren near Jersey Cove, Cape Breton, *Nichols*, no. 1416; Stevens Mt., Fort Kent, Maine, *Williams*; bank of Fish River, Fort Kent, Maine, *Churchill*; pasture, Lombard Hill, Colebrook, New Hampshire, *Pease*, no. 16,947; base of Pine Mt., Gorham, New Hampshire, *Pease*, no. 17,925; top of Willoughby Mt., Vermont, *Cheever*.

[3] Such, for instance, as: granite ledges, summit of Hodge's Hill, Newfoundland, *Fernald, Wiegand & Bartram*, no. 4389; terrains secs, Petit-Saguenay, Quebec, *Victorin*, no. 9331; subalpine wooded meadows, Table-top Mt., Quebec, *Fernald & Collins*, no. 153; dry clearings, Alberton, Prince Edward Island, *Fernald & St. John*, no. 6705.

uncles, while those of deep shade have them longer. Thus the bulk of typical *L. sitchense*, a plant characteristic of open barrens and alpine summits, has sessile or short-peduncled strobiles, while the specimens from woods show definite elongation of the peduncle. Conversely, *L. sabinaefolium* is most commonly a plant of woodland and thicket and in deep shade its peduncles may reach the length of 5–8 cm.[1]

Search for new characters to separate the two plants as species has thus far proved fruitless and the writer is forced to the conclusion that *L. sabinaefolium* and its var. *sitchense* are quite parallel with *L. obscurum* and its var. *dendroideum*; the tendency to dorsiventral branchlets and looser habit being found in the plant which is more characteristic of woods and thickets, the tendency to more terete branchlets and compact habit in the plant which more often occurs in the open. In this connection it is significant that in his study of the sheets in the Gray Herbarium, Professor Lloyd originally gave them a varietal name which seems not to have been published. It is also significant that Lloyd & Underwood state, in their discussion of *L. sitchense*: "This form has been confused with *L. sabinaefolium* Willd. and Herr Ernst Pritzel, who has kindly examined Willdenow's type sheet for us at Berlin, . . . assures us that both this plant and what we here regard as true *L. sabinaefolium* are a part of Willdenow's original material from which he doubtless drew the description of *L. sabinaefolium.* The description of the latter with its expression 'foliis lanceolatis acutis quadrifariis' indicates clearly the form Willdenow had in mind in naming the plant."[2] Willdenow's phrase certainly indicates which of the two plants he called *L. sabinaefolium* should be taken as the type; but the circumstance that he had *L. sitchense* mixed with it shows that he did not regard them as distinct species.

Gray Herbarium.

[1] Such plants as: dry spruce woods, Nouvelle, Quebec, *Collins & Fernald* (5 cm.); dry woods, Tarbet Vale, Cape Breton, *Nichols*, no. 1383 (3–6 cm.); woods, Fall Brook, near St. Francis River, Maine, *Churchill* (5.5–6.5 cm.); woods, Sharon, New Hampshire, *Blake* no. 516, paratype of *L. sabinaefolium*, var. *sharonense* Blake (6.5–8 cm.).

[2] Lloyd & Underwood, l. c. 162, 163 (1900).

A new Station for three local Appalachian Plants.—In 1894, Dr. J. K. Small described (Mem. Torr. Bot. Club **4**: 112) a new species of native clover, *Trifolium virginicum*, as "growing on rocky slopes of Kate's Mountain, Greenbrier County, West Virginia, in company with *Clematis ovata*." This is the only station given for this species in the seventh edition of Gray's Manual and in the second edition of Britton & Brown's Illustrated Flora. The species is omitted entirely from Dr. Small's Flora of the Southeastern United States, which covers the area from North Carolina southward. But Miss L. F. McDermott, who in 1908 published a monograph of the "North American Trifoliums," reducing the plant to a variety of *Trifolium reflexum* L., states that it is "abundant throughout the Appalachian Mountains of the eastern United States," though she cites specimens only from Kate's Mountain. The only specimens of it in the Gray Herbarium are also from Kate's Mountain and Dr. Small has recently written me that "to say that the species is common in the Appalachian Mountains, may be prophecy, but such a statement certainly cannot be backed by good evidence."

My interest in the distribution of the plant arose from the fact that besides having collected it on Kate's Mountain I have also found it growing on a slaty hillside at Virginia Hot Springs, Bath County, Virginia. That conditions here were very similar to those on Kate's Mountain was evidenced by the fact that with it at the Hot Springs was growing *Clematis ovata*, Pursh, the distribution of which is given in Dr. Small's Flora as "in dry soil, Kate's Mountain, West Virginia, and apparently first collected on Negroes Head, a mountain of the Blue Ridge in South Carolina or Georgia." With it there was also found the rare and local *Pseudotaenidia montana*, Mackenzie, for which Kate's Mountain and Luray Cavern are the only localities mentioned in Gray's Manual. Specimens of these three species from the Hot Springs have not been deposited in the Gray Herbarium. —F. W. Hunnewell, Wellesley, Massachusetts.

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A

Farlow Bot. Lab.

Rhodora

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JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

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NATURALIZED OCCURRENCE OF PRUNUS PADUS IN AMERICA.

Bayard Long.

The only recognition of the Bird Cherry of the Old World, *Prunus Padus,* as an element of our American flora appears to be in Porter's Flora of Pennsylvania, where it is reported from Pittsburg, in Allegheny County, and accredited with a general occurrence, "locally escaped in eastern N. Am."—the general statement seemingly based entirely upon this specific instance. This record rests upon material collected June 30, 1900 by G. A. Link, and distributed from the Carnegie Museum. The label indicates the plant as "spontaneous on South Side hills, 31st Ward, Pittsburg."[1]

Some years ago the fact was discovered that the species had been collected quite a number of times about Philadelphia, and in most cases mistaken for the native *Prunus virginiana.* It was to be assumed with good reason that these collections had been made from plants growing wild, or ones not obviously under cultivation. With the interest arising in this new member-in-prospect of our local flora, the attempt has been made to rediscover as many of these

[1] The interest of Dr. Otto E. Jennings of the Carnegie Museum has been solicited in the hope that he might be able to add some further information on the occurrence of the plant in this region. He writes that he is not familiar personally with *Prunus Padus* and that the South Side hills are not well known ground to him, but he believes that the species cannot be spreading to any extent in the Pittsburg region since it has not been met elsewhere. Besides the Link material, there is in the Carnegie Museum another specimen from the same locality (and probably the same tree) collected by John A. Shafer in 1901. A note written by Dr. Shafer is also preserved in the herbarium: "A number of trees are growing in the main road of Mt. Oliver just beyond the City limits." Mt. Oliver is south of Pittsburg and just beyond the South Hills section. There is no clear indication, however, that these individuals are of spontaneous occurrence.

stations as possible and to obtain field information on the extent of naturalization which the species has undergone. In the course of this investigation many new stations have been discovered and much detailed data gathered on the local distribution of the species. Through the attention directed to it, each year adds its quota of information to our knowledge of the occurrence of the plant, so that there is now sufficient data to show that the species has become naturalized thoroughly in many places in the Philadelphia area—much more so, in fact, than many a shrub or tree that, not infrequently upon very scanty evidence, has long had a place in our flora.

Prunus Padus is a small tree occurring natively in the northern portions of the Old World. Although it is sometimes credited with being common in cultivation in America, there is little evidence that it is in any present demand. Very few nurserymen have it for sale or even catalogue it. It appears to have been rather popular in America years ago, but now it has rather lapsed into the category of "a plant of old gardens."

There are few more attractive woody species to be seen about Philadelphia. By mid-April the leaves are already unfolding and the plant is bright and green, while thickets and woods are still brown or brightened only by the flowers of the Spice Bush. With the first days of May (or the end of April in early seasons) the plant is covered with long racemes of white blossoms. The flowering season, as in so many trees, is quite short, scarcely over a week or ten days, and within a few weeks the fruit develops sufficiently to show the characteristic roughened stone. Late June to early July brings the brief season of ripe fruit.

In some characters this plant closely simulates the native Choke Cherry, *Prunus virginiana*, and in others, the Wild Black Cherry, *P. serotina*. The former does not occur in the immediate vicinity of Philadelphia and has not been found in the area where *P. Padus* is naturalized, but *P. serotina* is a common "weed" tree about Philadelphia and a frequent associate of *P. Padus*. The habit of *P. Padus* is distinctly arborescent and the bark quite dark. In these characters it resembles *P. serotina*. In winter, or in early spring when the leaves are just unfolding, there is frequently considerable difficulty found in distinguishing it from the Wild Black Cherry. The Choke Cherry, however, is characteristically a shrub, rarely attaining tree-like proportions, with bark more inclined to be grayish.

The leaves of *P. Padus* are mostly obovate and very like those of *P. virginiana,* but the margins are not so sharply serrate. They are of course quite different from the thick, oval, blunt-toothed leaves of *P. serotina.* In some strains the flowers and the racemes are rather similar to those of *P. virginiana* and *P. serotina* but the form most commonly met bears very handsome elongated and often drooping racemes of large-petaled blossoms, strikingly different from its near relatives, and in fact more closely resembling those of an *Amelanchier.* The racemes are characteristically more loosely flowered than in either of the other species, and the pedicels are longer. The flowering season is apparently slightly earlier than that of *P. virginiana* and about a week or ten days earlier than in *P. serotina*—as *P. Padus* is passing out of bloom, the first flowers of *P. serotina* are opening. The cherry is small, round, dark reddish-black and shining, with thin, greenish pulp. The stone is roughened with irregularly disposed projections, this character at once differentiating the species from its allies, which have smooth stones. The fruit varies in quality, as might be expected, but one rarely meets any that he cares to sample a second time. The best that may be said of this cherry is that some strains are perhaps less astringent and nauseating than others. The fruit ripens about three weeks earlier than *P. virginiana* and a month before *P. serotina.* Frequently fruit sets plentifully, especially on individuals growing in the open or on the borders of woods and thickets. The birds apparently eat it as greedily as they do all other cherries, and are probably in large measure responsible for the dissemination of the seed. A tree seen earlier in the season and known to be well fruited may often be found almost stripped of cherries on being visited when the fruit is ripe.

The station first known to me lies in Lansdowne, which is in Delaware County just outside the Philadelphia city limits to the westward. More precisely, it is near Lansdowne Avenue and Pennock Terrace, in a rich wooded gully adjacent to Darby Creek. The early years of my botanizing made me acquainted with this plant—long before *Prunus Padus* was a familiar name to me, and even before *P. virginiana* had been encountered. So it is almost superfluous to note my original idea of its identity—and possibly the close affinity of these two species and the absence of the Old World one from our manuals is sufficient excuse. After more than fifteen years the station was recently revisited. If one's recollection that far back can be trusted,

this station for the cherry consisted of comparatively few individuals in 1905. There are now some scores of trees of various ages thoroughly naturalized on the wooded slopes and especially along the streamlet in the alluvial bottom. They appear quite as indigenous to the gully as the associated Spice Bush, Slippery Elm, and other native shrubs and trees characteristic of southeastern Pennsylvania. In spring the alluvium of this gully, however, is carpeted with the Lesser Celandine. The Japanese Knotweed has become well naturalized here, and nearby is an extensive colony of Goutweed. The site of the old Pennock greenhouses is not far away; possibly the origin of some of these plants is to be traced to the Pennock place. Small dwellings are now being built along the slopes and a road has been run diagonally down and across the gully, but the wooded character of the locality is apparently being carefully preserved and the cherry in large measure may remain undisturbed.

More than twenty years ago the late Alexander MacElwee collected the Bird Cherry in the northwestern part of Philadelphia, along Gorgas Lane in Germantown. In 1921 there was an opportunity with Mr. MacElwee's assistance to re-explore this region, which is near the head of Wingohocking Creek. He selected a position along the Philadelphia and Reading Railway just northwest of where Washington Lane Station is now located as probably the spot where he made his collection in 1899. Here, escaped the processes of "improvement," are still remnants of natural woodland, now, however, filled up solidly in many places with the Empress Tree and the Gray Birch (a naturalized species here),[1] as well as with an equally weedy growth of the Wild Black Cherry. Seedlings of the Bird Cherry, and young trees up to six or seven feet high, may be found scattered through the woodlands for at least a quarter-mile. Near a picturesque, ruined old springhouse in these woods is a thirty-foot tree of the Bird Cherry. The large size and the proximity to the springhouse suggest the possibility of its being a relic of cultivation and the "mother tree" of the Bird Cherries in this vicinity.

[1] The discriminating botanist familiar in the field with the local flora of southeastern Pennsylvania and southern New Jersey recognizes that *Betula populifolia*, as a native tree, is almost absent from the lower Piedmont area. It is common on the Coastal Plain but above the fall line reappears as a definitely indigenous and characteristic species only at the foot of the Alleghanies. In this wide intervening stretch of country most of the few occurrences known can be shown to be cases of introduction. It has a strong tendency to become a weed on filled ground or on disturbed, particularly clayey soils.

One of the main routes of exit from Philadelphia into the woods and green fields of the northern part of the city and the adjacent suburbs is 5th Street. On Sundays and fine days in spring there are few of the city ramblers who do not have bunches of violets, or buttercups, or what not. Beyond Fisher Park, near the corner of 5th Street and Green Lane is a Bird Cherry which, when in bloom, rarely escapes the bouquet-makers. In its season it is a mass of flowers and so conspicuous that it constantly attracts attention. It stands on the roadside, rather in the open, and has had opportunity to develop into a handsome, full-branched, symmetrical specimen fifteen feet in height. It has a shrubby habit, with numerous main stems, in consequence, doubtless, of having been cut down close to the ground at some time. Along with nearby scattered pears and apples unquestionably it has arisen spontaneously.

Much of this area is "the old Fox Estate" and is a region of homesteads now long gone to decay and ruin. The origin of the Bird Cherry here seems traceable to these old places. On the corner opposite to the shrubby specimen is a dilapidated house, and in what must have once been the yard are several of the cherries of varying size. One aged specimen is possibly a remnant of the planted shrubbery but the others are small and so disposed in the woods and thickets as to appear spontaneous.

East along Green Lane is another place on the Fox Estate where there must have been a homestead. Two large Horse-chestnuts suggest a gateway at one spot but the house has long disappeared and many acres are overrun by Black Locust and Wild Black Cherry, while the ground is carpeted with Star of Bethlehem. The Empress Tree, the Washington Thorn, and the Norway Maple have become extensively naturalized, and here one may readily pick out the Bird Cherry scattered through the woods. This old place extends eastward to New 2nd Street. Along this old road (with a new name) at the edge of a wild tangle of native species, thorn and Japanese Honeysuckle is a two-stemmed, spreading specimen of the Bird Cherry nearly twenty feet across. It seems very unlikely, despite its size and age, that it should have been planted in this position; it appears to have arisen from natural seeding.

A mile or more beyond the area of the old Fox Estate is another station for the Bird Cherry near the James Fisher place in Montgomery County, to the east of Oak Lane, Philadelphia. For some distance

along the City Line side of this estate, doubtless what was originally a screening hedgerow has become so wild and thickly grown up with trees and shrubs that it is now a deep tangle. There is an abundance of native plants (such as might be met with in any roadside thicket in this region) and common naturalized species like the Crack Willow and the Sweet Cherry, but there are also quantities of the Norway Maple, the Sycamore Maple and the English Ash—species still rare in a naturalized occurrence. Certain of the largest of these individuals no doubt were planted but specimens of all possible sizes from seedlings to mature young trees occur everywhere in the vicinity. Ancient portions of an Osage Orange hedge may still be detected here and there under the trees and indicate that the plants have arisen through natural seeding by birds and wind, there being few more favorable habitats for such naturalizing than a neglected hedgerow. Among this assemblage of species the Bird Cherry occurs in two spots. Near the main entrance gate are three individuals, two of which are ten to twelve feet high and quite broad. In another portion of the hedgerow, about a city block distant, there is a scattered lot of a half-dozen or so specimens ranging from four to six feet in height, the largest of which are beginning to flower.

Another mile distant—to the southeast at Crescentville, a quaint old spot in the limits of Philadelphia—there are two individuals along Tacony Creek immediately above the main road-bridge. They lie at the foot of the wooded slope, growing upon rocky banks almost within reach of the water. One is a rather low, spreading specimen but the other is a slender tree twenty-five or more feet high and when in bloom conspicuous from the nearby bridge. These specimens have all the appearance of native species, as far as is indicated by their habitat, and would likely be taken for such by the unknowing. There are dwellings in the crest of the slope and possibly a certain amount of garden rubbish and yard cleanings has found its way down into the woods. There is also a trail leading in from the road and some dumping has occurred along it, from whence a small colony of Lily of the Valley has established itself. But it seems quite as likely, in the light of later discovered colonies, that the seeds of the cherry may have been carried down by the stream. At my first visit here, a small girl gathering flowers assured me that there were no other trees hereabouts with flowers like these. She incidentally inquired what kind of tree it was and I hazarded "a kind of cherry."

But after holding up a flowering branch at arm's length, smelling it and casting upon it a critical glance, she said, "No, I guess it's locust." That there may be other specimens in this immediate vicinity is evidenced by material collected by Mr. MacElwee in 1899 "opposite the old mill on the island." This is only a short distance below the main road-bridge but a somewhat cursory search in 1918 failed to reveal the species there.

Further up Tacony Creek, on a tributary streamlet near the village of Cheltenham, in Montgomery County, the cherry has again been picked up—a small plant growing in natural woodland.

At Ashbourne, a couple of miles still further up Tacony Creek, the species is again to be seen. On the freshet-swept banks of the creek below the village occurs a well rounded, much-branched tree ten feet high. There are several smaller individuals in adjacent woods and thickets within a quarter-mile.

To the eastward of this general region about Tacony Creek another area for the cherry may be encountered. Going out from the city along Oxford Pike, the Philadelphia botanist will notice beyond Frankford an abundance of the little round-headed trees of the Sour Cherry about the site of a former habitation. This is not a common naturalized species in the vicinity of the city and if he stops here numerous other species will be found spreading from the original plantings or thoroughly naturalized. Here are almost impenetrable thickets of naturalized Prickly Ash, *Zanthoxylon americanum*, an abundance of Silver Maple, also naturalized, a shrub or two of Silver Bell growing wild—among these the Bird Cherry. This station was brought to notice by the discerning eyes of Mr. R. R. Dreisbach.

If one continues on, turning into the Roosevelt Boulevard, Pennypack Park will be reached in a few miles. In the rich alluvial woods not far down Pennypack Creek there are a half-dozen trees of the Bird Cherry. They are tall, straight, slender specimens ranging from twenty feet to as much as fifty feet in height. The fact that this station occurs in Pennypack Park is not to be misconstrued into a belief that the cherries may have been planted. The park is of recent founding and embraces the natural wooded valley of the creek —the cherries long antedating the park. There is nothing to suggest to the novice that these are foreign plants (so indigenous-like do they appear in these wild woods) except the presence not far away of the common Day Lily—too frequent, however, to be much of an indicator of introduced species.

All the localities above described lie within ten miles or less of the center of Philadelphia. Several other stations more removed have come to notice. Twenty miles northwestward in Pennsylvania a collection has been made near Gwynedd Valley in Montgomery County. Up the Delaware River it has been collected in Burlington County, New Jersey at Edgewater Park and near Bordentown, fifteen and twenty-five miles, respectively, to the northeast. To the southwest of Philadelphia there is material from Ivy Mills in Delaware County, Pennsylvania, fifteen miles distant, and from Mount Cuba in Newcastle County, Delaware, twenty-five miles away.

The material from the vicinity of Gwynedd Valley was collected by Mr. MacElwee, May 4, 1902, at the crossroads village, Franklinville. Exploration with a detailed map from the collector indicating the probable spot failed upon two occasions in 1922 to reveal the cherry but the region is one of such extensive fence-rows, thickets and woods that, among the abundant Wild Black Cherries occurring there, a small tree or two of the Bird Cherry might readily be overlooked. It may be noted in passing, however, that the region is evidently a favorable one for introductions. The Japanese Barberry, *Berberis Thunbergii,* is probably more thoroughly naturalized here than in any other locality about Philadelphia. There is an abundance of the Garden Red Currant in wild thickets near the village. At other spots on roadsides are naturalized Poet's Narcissus and Everlasting Pea.

On the alluvial banks of the Delaware River above Edgewater Park there is a small specime of the cherry associated with the Ash-leaved Maple, the Red Ash and the White Mulberry (the last abundantly naturalized in the Delaware valley). It is obviously of spontaneous origin, its position on the very edge of the river suggesting the possibility of the seed having been carried by the water. It fruits well, its branches overhanging the river, and some of its seeds might easily be dispersed, in turn, by means of the river.

The Bordentown locality is on a tributary of Black's Creek, in the general vicinity of Dunn's Mills, and about a mile back from the Delaware. On the crest of the wooded slope by the stream there is a tree of the cherry about ten feet high and as broad. It is in a rather dense tangle of woods and tall thickets adjacent to an old farm. Fragments of broken china and crumbling farm implements protruding from the soil, nearby, evidence a former rubbish heap. Another spreading tree of similar size is in rich alluvial woods about a quarter-

mile up the stream. Associated with the cherries is the European Spindle Tree, very extensively naturalized along this stream for some distance.

The collection near Ivy Mills was made by Dr. F. W. Pennell in 1909. Dr. Pennell informs me that a single tree was noted, apparently wild, along the bank of the West Branch of Chester Creek. This locality is a short distance above Chester Heights, a more familiar place-name.

The Mount Cuba record is based upon material collected by Mr. MacElwee, May 6, 1893. Unfortunately the station has not been rediscovered and we have no detailed information on the occurrence.

It may be noted, in summary, that these observations on the naturalized condition exhibited by *Prunus Padus* in the Philadelphia region are based upon what may be considered a good score of stations, embracing not less than a hundred trees, scattered over a distance of more than fifty miles. Furthermore, that collections and field observations extend through a period of thirty years.

Academy of Natural Sciences of Philadelphia.

THE AMERICAN VARIETY OF SCHEUCHZERIA PALUSTRIS.

M. L. Fernald.

Upon comparing the American material of *Scheuchzeria palustris* with the typical European plants it at once becomes apparent that in the size and shape of the fruit there is a pronounced difference between the two. The European plant has the short ovoid follicles only 5–7 mm. long and crowned by the strongly decurrent sessile stigma; but in the American plant the often narrower follicles are 7–10 mm. long and tipped by a definite thick style, forming a slightly curved beak 0.5–1 mm. long. The seeds of the European plant are likewise smaller, 3–4 mm. long, while in the American they are 4–5 mm. in length and black in maturity. Whether the seeds of the European become black I have been unable to make out, neither Micheli[1] nor Buchenau[2] stating the color, although Syme says, "pale olive."[3] Such seeds of the European plant as have been avail-

[1] Micheli in DC. Mon. iii. 96 (1881).
[2] Buchenau in Engler, Pflanzenr. iv. Ab. 14: 15 (1903).
[3] Engl. Bot. ed. Syme, ix. 67 (1873).

able are a pale brown but this is the color of immature seeds of the American. It is, therefore, not wise to lay great emphasis upon the color. Nor do there seem to be any appreciable differences in the rootstocks, foliage and flowers of the two plants; and it is significant that, although having the sessile stigmas of the European, the Japanese plant has follicles as large as in the American. It seems, then, that the North American plant should be called

Scheuchzeria palustris L., var. **americana**, n. var., a forma europaea differt floribus 3–4 mm. longis; folliculis 7–10 mm. longis rostratis, rostro 0.5–1 mm. longo curvato; seminibus anguste ellipsoideis 4–5 mm. longis atris.—Newfoundland to Manitoba and Washington, south to New Jersey, Pennsylvania, Illinois, Iowa and California. The following, selected from many specimens, are characteristic. Newfoundland: wet open bog, Glenwood, July 12 and 13, 1911, *Fernald, Wiegand & Darlington*, no. 4707; shallow pools in bogs, Grand Falls, July 26, 1911, *Fernald, Wiegand, Bartram & Darlington*, no. 4510. Quebec: sphagnum bog, Natashquan, September 4, 1915, *St. John*, no. 90,107; quagmires at 1035 m. (3400 ft.) Table-top Mountain, August 10, 1906, *Fernald & Collins*, no. 332; Napierville, July 10, 1863, *G. G. Kennedy*. Nova Scotia: bog-holes in barrens, mountains west of Ingonish, August 13, 1914, *Nichols*, no. 842; quagmire-margin of Gold Lake, Birchtown Brook, September 8, 1921, *Fernald & Long*, no. 23,164 (type in Gray Herb.); sphagnous wet peaty margin of Harper Lake, September 8, 1921, *Fernald & Long*, no. 23,165. Maine: Bangor bog, Orono, July 27, 1895, *Fernald*, no. 352; open sphagnum bog, Baker bog, Township vi, Range 17, Somerset Co., July 17, 1917, *St. John & Nichols*, no. 2110; bog, South Chesterville, August, 1904, *L. O. Eaton*; boggy intervale, St. Croix Junction, Calais, August 3, 1909, *Fernald*, no. 1600; Great Heath, Great Cranberry Island, August 29, 1892, *Redfield & Rand*; bog, edge of Great Pond, Belgrade, August 31, 1898, *Fernald*, no. 2742; quaking bog by Lily Pond, Limington, August 29, 1916, *Fernald, Long & Norton*, no. 12,419. New Hampshire: bog, Shelburne, August 16, 1884, *Deane*; abundant about Buck Pond, Stewartstown, July 19, 1917, *Fernald & Pease*, no. 16,606; bog north of Cherry Pond, Jefferson, September 12, 1908, *Pease*, no. 11,433; Large Pond, Fall Mt., Walpole, July 12, 1901, *Blanchard*. Vermont: "In udis sphagnosis ad Colchester," *Oakes*; Snake Mt., August 25, 1880, *Faxon*; Mud Pond, alt. 2300 ft., Wallingford, July 7, 1898, *Eggleston & Kent*; bog, Pownal, July 29, 1898, *Churchill*. Massachusetts: Tewksbury, June 23, 1853, *Wm. Boott;* swamp, Natick, June 30, 1885, *Deane*; peat bog, Billings Pond, Sharon, June 27, 1909, *Knowlton*; peat bog, Sheffield, August 27, 1902, *Hoffmann*. Connecticut: sphagnum bog by Lake Congamond, Suffield, June 22, 1915, *Blewitt*, no. 3539; sphagnum bog about Bingham Pond, Salisbury, July 30,

1904, *Bissell.* New York: bog west of Ampersand Lake, July 13, 1899, *Rowlee, Wiegand & Hastings*; Albany, *Torrey*; quaking morass on Hidden Lake, Litchfield, June 27, 1901, *Haberer*, no. 1006; sphagnum bog, Duck Lake, Conquest, July 1, 1916, *McDaniels, Metcalf & Wiegand*, no. 5477; open moor of Junius Peat Bog, Waterloo, June 20, 1914, *Thomas & Wiegand*, no. 1520. New Jersey: bogs, Budd's Lake, Morris Co., June 25, 1869, *C. F. Parker.* Pennsylvania: Grass Lake, Pocono Mt., August 19, 1863, *Traill Green*; kettle hole bog, Pocono Plateau, July 15, 1904, *Harshberger.* Ontario: bogs, Mere Bleue, June 15, 1898, *Macoun*, no. 67,792. Michigan: sphagnum bog, Mud Lake, Cheboygan Co., July 28, 1917, *Ehlers*, no. 568. Wisconsin: peat bogs, Marinette Co., July 6, 1891, *Schuette.* Illinois: Ringwood, 1860, *Vasey.* Minnesota: White Bear Lake, July 17, 1888, *Schuette.* Iowa: Armstrong, August 8, 1884, *Cratty.* Manitoba: between Cumberland House (Sask.) and Hudson Bay, *Richardson.* California: Sierra Co., 1875, *Lemmon*, no. 1037. Washington: swamps at 610–915 m. (2–3000 ft.) alt., Skamania Co., Sept. 2, 1893, *Suksdorf*, no. 1327; White Salmon, 1878, *Suksdorf*; Colville to the Rocky Mts., 1861, *Lyall.*

There are many excellent illustrations of typical *Scheuchzeria palustris* of Europe, for instance, Flora Danica, i. t. 76 (1766); Nees, Gen. Pl. Germ. ii. t. 24 (1843); Reichenb. Ic. Fl. Germ. x. t. 419 (1848); Engl. Bot. ed. Syme, ix. t. 1435 (1873); Thomé, Fl. von Deutschl. i. t. 34A (1886).

Gray Herbarium.

NOTES ON TREES AND SHRUBS OF THE SOUTH-EASTERN UNITED STATES.

W. W. Ashe.

? × **Quercus caput-rivuli**, sp. nov. A tree 6–12 m. high, 1–3 dm. in diameter with somewhat pendulous lower branches. Bark on trunk at the base of larger trees nearly black, deeply furrowed and cross-checked, above gray and nearly smooth. Twigs slender, pubescent with short brown stellate hairs, partly persistent until the second year. Leaves prevailingly broadly obovate, undulate or rarely slightly 3-lobed at the broad apex, cuneate or abruptly narrowed or sometimes even rounded at the base, blades 7–14 cm. long, 5–10 cm. wide, firm, dark green and glabrate above, at first more or less stellate-pubescent beneath, at length glabrate except for tufts in the axils of the 3–5 pairs of prominent lateral veins, which (and usually the midrib as well) divide up near the margins of the blades and consequently are seldom extended as awns; petioles 6–8 mm.

long, pubescent. Nut, maturing the second year, depressed or subglobose, slightly broader than long, 10–12 mm. thick, pubescent, dark brown, about one third covered by the rather deep flat-bottomed cup with thin edge formed of several rows of appressed closely pubescent silvery brown scales. Aments about 4 cm. long, rather loose.

Growing on sandy soil near Crestview, Florida, with many other oaks. The nut is strongly suggestive of that of *Quercus megacarpa* Ashe[1] of the same general region, but the leaves of *megacarpa* are much contracted in the middle, and are glabrous beneath. The foliage resembles that of *Q. arkansana* Sarg.[2] but the petioles are much shorter and the upper pair of lateral veins are less prominent and are rarely extended as awns.

Carya ovalis mollis, var. nov. Having the fruit of the type and with its red petioles and large leaflets, but the leaflets soft-pubescent beneath. Dry crests of ridges, Twin Creeks, Adams County, Ohio.

For several years various forms of the dwarf rose-flowered locusts (*Robinia*) of the southeastern United States have been cultivated. Many of these forms when cultivated failed to set fruit and if the wild plants of these forms fruited it was seldom. A number of years ago Meehan noticed this in the case of *Robinia hispida* L. At one time this absence of fruit was thought to be due to failure to secure cross fertilization on account of the absence of proper insects from plants in cultivation. Subsequently these barren forms were regarded as sterile hybrids. The wide and general distribution of some of these plants, however, seemed to render this view untenable. Later the fact that not infrequently a fruiting form and a barren form were widely associated led to the conclusion that both might be forms of the same species. Following this idea there were included in the description of *R. grandiflora* Ashe[3] two plants which frequently grow together, one producing fruit, the other apparently barren, but connected by a more or less intermediate form. Attempts at cross fertilization and two seasons' further study both of wild and cultivated plants indicate that these forms have no such complementary relation but are better regarded as distinct species. Similarly the form recently described as *R. unakae* Ashe[4] was held to be the fertile component of *R. hispida* and the statement made that *R. hispida* freely produced fruit and that plants had been grown from its seed.

[1] Bul. Charleston Mus. 14, 9 (1918).
[2] Trees and Shrubs 2, 121 (1913).
[3] Journ. Mitchell Sci. Soc. 37, 176 (1922).
[4] Op. cit. 39, 111 (1923).

From present information it appears that a large number of these species do not fruit, or if so only when wild and then seldom. Bean[1] ascribes this to absence of pollen. Large groups of plants, however, if exclusively of vegetative origin, are properly regarded as a single plant so far as cross-fertilization is concerned.

The description of *R. grandiflora* was largely drawn from fruiting specimens collected July, 1900, on Grandfather Mountain, N. C., but it seems desirable to revise the description so as to limit it to this plant which has now been cultivated for two years as well as again studied growing wild at Wiseman's Bluff, Linville Mt. and at the type locality.

Robinia grandiflora Ashe (Journ. Mitchell Sci. Soc. 37: 176. 1922). A shrub .6–1 m. high or in cultivation becoming 1.6 m. high, with peduncle, calyx, rachis and petiole more or less hispid especially on young plants and with vigorous shoots densely hispid; but on old plants the twigs and shoots may be nearly or quite free of setae. Young twigs especially on old plants, peduncles and leaflets on unfolding closely grayish pubescent as well as petioles and rachises. Leaflets 9–15, elliptic or broadly ovate, rounded at the ends, 1.8–3.1 mm. wide, pale beneath when mature. Flowers about 20 mm. long, pale rose or pale purplish-rose with white, 4–8 in a raceme, peduncles pubescent and hispid, on young plants densely hispid, on old ones sparingly so; calyx 8–10 mm. long, the lobes long-acuminate, much inflated in fruit, hispid, on very young plants densely so and more or less pubescent, part of the hairs being sometimes gland-tipped. Leaves bronze on unfolding.

Linville Mountain, N. C., where not uncommon or at Wiseman's Bluff very common and associated with *R. speciosa.* Flowers from a cultivated plant.

Robinia speciosa, sp. nov. (*R. grandiflora* Ashe, in part). A much branched shrub propagating by root-suckers, 1–1.5 m. high or in cultivation becoming 2 m. high; branchlets dull tan, stipular spines wanting. Young shoots covered with short pale brown pubescence often becoming glabrate, vigorous shoots hispid with pale setae. Leaves of 9–13 ovate or elliptic-ovate, abruptly pointed or obtuse leaflets, 22–34 mm. wide, on unfolding deep bronze and covered beneath with pale gray or yellowish-gray pubescence as well as petiole and rachis. Flowers large, 21–24 mm. long, bright rose and pink with white, in 5–8-flowered racemes; calyx broad, 8–10 mm. long, brownish-gray pubescent and sparingly hispidulose, the 4 mm. long lobes abruptly acuminate; peduncles 3.5–6 cm. long, pubescent and usually slightly hispidulose.

[1] Trees and Shrubs Cult. Brit. 2, 410.

Common on Grandmother Mt., Linville Mt., and Pixie Mt., N. C., and plants from each place in cultivation. A plant now in cultivation, which, however, has not yet flowered, seems to be a nearly or quite glabrous form. Several live plants of this have been distributed as *R. grandiflora* and at least a portion of the herbarium specimens in flower distributed under this name belong here.

Robinia pallida, sp. nov. (*R. grandiflora* Ashe, in part). A shrub propagating by root-suckers, 3–6 dm. high, or in cultivation becoming 2 m. high; stems pale brown with few short greenish-brown branchlets at the summit; stipular spines wanting. Shoots at first covered with close light gray pubescence, becoming glabrate; peduncles and often petioles, rachis and vigorous shoots more or less hispid with pale setae. Inflorescence, rachis and lower surface of leaflets until mature covered with pale gray often appressed pubescence. Leaves are of 9–15 ovate or oblong-ovate sharply acute leaflets, 4–5.5 cm. long, green on unfolding, very pale beneath. Flowers large, 21–23 mm. long, pale rose and pale purplish-rose with much white, in 5–9-flowered racemes; calyx broad, 8–10 mm. long, gray, pubescent and sparingly hispidulose, the lobes about 4 mm. long and abruptly acuminate; peduncles 5–6 cm. long.

Slopes of the Blue Ridge, Caldwell county, N. C. Plants in cultivation since 1916 collected on the road from Patterson to Blowing Rock, N. C. In cultivation blooms just after *R. speciosa.* This plant was included in the original description of *R. grandiflora* and some plants of it were distributed under that name.

All three of the above proposed species have quite similar pubescence. As the flowering season is short this similarity in the pubescence has been confusing. *Grandiflora* is quite hispid. *Pallida* and *speciosa* are copiously hispid only on vigorous shoots; neither is known to fruit; *grandiflora* fruits freely. In many respects *pallida* is intermediate between *speciosa* and *grandiflora.* When their extreme forms are compared in cultivated plants their differences are very apparent.

Robinia fertilis, sp. nov. A shrub becoming in cultivation 2 mm. high; petiole, rachis, peduncle, calyx and stout twigs hispid, with more or less loose short pubescence, or much longer on calyx and peduncle, intermixed. Leaves from 22 to 30 cm. long of 15–19, usually 17, oblong-ovate, nearly glabrous leaflets, from 17–25 mm. wide. Peduncle stout, 5.3–8 cm. long, 5–9-flowered; flowers about 22 mm. long; calyx 9–11 mm. long, lobes long-acuminate, pubescent and with some gland-tipped hairs. Fruit 3–5.5 cm. long densely hispid; seed 3–4 mm. long.

In cultivation the flowering season of this showy plant, much like *R. hispida,* is prolonged. It has the same habit as *hispida* and becomes a symmetrical treelike shrub, 1.3 to 2 m. high.

Robinia boyntonii Ashe,[1] as described, is an aggregate though the major part of the description was based upon a single and well known plant. The description of the fruit was drawn from an herbarium specimen which was later recognized as being different from the flowering plant. Groups of *R. boyntonii* examined for several years have not been known to produce fruit. It is probably one of the forms which does not produce fruit.

Robinia longiloba Ashe[2] was described largely from a plant which is now in cultivation, but the description of the fruit was drawn from an herbarium specimen originally included in *R. boyntonii.* More recently living plants which agree in all particulars with this fruiting specimen have been located and are now in cultivation. These plants differ so strikingly from *R. longiloba* that they have been separated from it as *R. pedunculata* Ashe[3] in allusion to the elongated peduncles. In cultivation it fruits freely. *R. longiloba,* as cultivated, or in two groups of wild plants numbering several hundred stems, has not been known to fruit.

Washington, D. C.

PLANT NOTES FROM SQUAM LAKE, NEW HAMPSHIRE.

H. K. Svenson.

Squam Lake lies in the foothills of the White Mountains, and is one of the group of lakes which extends from central New Hampshire to southwestern Maine. Its area is about fifteen square miles, including numerous coves, islands, and little bays. These plant notes refer to a small area at the northwestern corner of the lake, in the town of Holderness, Grafton County, and were obtained during the summer of 1921 in connection with work at Camp Algonquin. Rattlesnake Mountain, a hill rising from the lake to the height of about thirteen hundred feet, is probably the most interesting single locality. Composed of a rapidly disintegrating granitic rock, it is marked by

[1] Op. cit. 14, pt. 2, 51 (1897).
[2] Bul. Charleston Mus. 14, 30 (1918).
[3] Journ. Mitchell Sci. Soc. 39, 111 (1923).

the presence of several plants, usually occurring in limestone regions, such plants as *Clematis verticillaris* and *Arenaria stricta.* It is also characterized by such southern types as *Asplenium Trichomanes, Quercus coccinea* and *Pinus rigida.* The vegetation of the Squam range, lying a mile to the westward and composed of schists, is strikingly different. The boundary between Grafton and Carroll Counties runs across the eastern summit of Rattlesnake Mountain, so that plants occurring on the summit may be considered as growing in both counties.

Arenaria stricta Michx. This plant occurs abundantly on the eastern summit of Rattlesnake Mt., undoubtedly the locality "summit of a hill, Holderness, N. H.," where it was collected in 1891 by Dr. R. C. Manning.[1] It has more recently been collected in Bartlett, N. H., by A. S. Pease. So far as the writer knows, these two localities are the only stations in New Hampshire. The Mt. Washington station, as the foregoing reference mentions, was erroneously recorded through a transposition of labels.

Clematis verticillaris DC. The purple clematis occurs on the eastern summit of Rattlesnake Mt. It has also been noted in Moultonborough by A. C. Lownes. Associated with it on Rattlesnake Mt. are *Anychia canadensis,* apparently its northern outpost in New Hampshire, *Arabis viridis* Harger; *Asplenium Trichomanes* and *Selaginella rupestris.* Scattered over the summit are full-grown trees of *Quercus coccinea,* and conspicuous on the southern slopes is *Pinus rigida.* Both of these trees are rare so far to the northward.

Gaultheria procumbens L., forma **elongata,** n. f., floribus et fructibus valde elongatis.—Flowers and fruit conspicuously elongated. This form is striking. I have seen no herbarium material that even approaches it. It grew abundantly over several square rods on the eastern summit of Rattlesnake Mt., in open woods which had been previously burned, and produced an unusual amount of fruit. Type specimens are in the Herbarium of the New England Botanical Club, and in the Herbarium of Camp Algonquin.

Thelypteris hexagonoptera (Michx.) Weatherby. This fern grows vigorously in an opening in maple woods near the base of the mountain, some of the fronds measuring 35 cm. across. A northern locality for this plant.

[1] M. L. Fernald: The Status of Arenaria stricta in New Hampshire. Rhod. **11:** 184–185 (1909).

Nyssa sylvatica Marsh. A swamp containing at least two dozen large trees occurs at the edge of the lake at the foot of Rattlesnake Mountain. A hollow in one of these trees was large enough to contain a family of raccoons. In the Hanover, N. H., list of plants, *Nyssa sylvatica* is quoted on Jesup's authority as growing at Squam Lake. This may well be the place which Jesup had in mind, for at no other place in this region have large trees been seen by the writer. Growing in this swamp are *Woodwardia virginica* and *Sparganium minimum,* the former a southern, and the latter a northern species.

Just to the westward of this tupelo swamp on a sandy beach grows *Hemicarpha micrantha,* a small sedge characteristic of the coastal plain. Specimens in the Gray Herbarium show that this was collected at Squam Lake by C. E. Faxon as early as 1880. This is the northernmost station recorded in New Hampshire. Growing with it are *Cyperus dentatus* and *Panicum Tuckermani* Fernald. At the mouth of the brook which drains the valley between Rattlesnake Mountain and the Squam Range grow *Subularia aquatica, Sagittaria graminea,* and *Potamogeton bupleuroides* Fernald, the latter a species which is found most commonly in brackish coastal waters. In a bordering meadow grows *Polygala sanguinea,* a northern station for this plant.

On the eastern slopes of the Squam Range *Conopholis americana, Equisetum scirpoides,* and *Lycopodium sabinaefolium* were collected.

All of the foregoing plants were obtained within an area of a little more than one square mile. Specimens of most of these plants have been placed in the Herbarium of the New England Botanical Club.

Union College.

REPORTS ON THE FLORA OF THE BOSTON DISTRICT,—XLI.

LENTIBULARIACEAE.

UTRICULARIA.

U. biflora Lam. Charles River, Dedham (*E. & C. E. Faxon,* Aug. 3, 1880); Charles River below Wellesley (*K. M. Wiegand & M. Heatley,* July 20, 1908).

U. cornuta Michx. Wet sandy soil, often in shallow water; frequent.

U. geminiscapa Benj. (*U. clandestina* Nutt. of Gray's Manual, 7th ed. See Rhodora xxiii. 142, 1921.) Ponds and stagnant water, rare; Tewksbury, Westwood, Stoughton, Holbrook.

U. gibba L. Open peaty places and edges of ponds; occasional, but few reports south of Boston.

U. inflata Walt. Quiet water, frequent.

U. intermedia Hayne. Shallow water in pools, ditches and ponds; frequent, but few reports south of Boston.

U. minor L. Shallow water, rare; Wayland, Natick, Jamaica Plain, Dedham, Holbrook.

U. purpurea Walt. Quiet water, well distributed and frequent. Especially abundant in the millpond at Easton Furnace (in August).

U. resupinata B. D. Greene. Moist sand along shores of ponds, rare; Bradford, Boxford, Tewksbury, Wilmington, Lincoln, Concord, Acton Sherborn. First discovered at Tewksbury by B. D. Greene, and described by him in manuscript. First published in Bigelow Fl. Bost. 3d ed. 10, 1840.

U. vulgaris L., var. **americana** Gray. Stagnant water, common throughout.

OROBANCHACEAE.

CONOPHOLIS.

C. americana (L. f.) Wallr. Dry oak woods, parasitic, Middlesex Fells [Stoneham] and Blue Hill Reservation, very rare.

EPIFAGUS.

E. virginiana (L.) Bart. Parasitic in beech woods, occasional. (See Rhodora xvi. 112, 1914.)

OROBANCHE.

O. uniflora L. Damp woods and roadsides, parasitic, chiefly on roots of large herbs, frequent throughout.

BIGNONIACEAE.

CATALPA.

C. bignonioides Walt. Winthrop (*Anna T. Young*, July 23, 1882); wild in Back Bay vacant lots (*E. F. Williams* et al., Aug. 27, 1910 et seq.).

MARTYNIACEAE.

MARTYNIA.

M. louisiana Mill. Boston (*C. E. Perkins*, 1877). Specimen in herb. N. E. Botanical Club.

PHRYMACEAE.

PHRYMA.

P. Leptostachya L. Moist woods and more open places, rare; at 14 stations, but no reports from Plymouth Co.

PLANTAGINACEAE.

PLANTAGO.

P. ARISTATA Michx. Dry sandy and gravelly soil, common. A rather recent introduction from the central west.

P. CORONOPUS L. Boston dumps (*C. W. Swan*, Sept. 14, 1886). Specimen in herb. N. E. Botanical Club. Native of Europe, northern Africa and western Asia.

P. decipiens Barneoud. Salt marshes and ledges by the sea, all along the coast.

P. LANCEOLATA L. Dry fields and waste places, very common throughout.

P. LANCEOLATA L., var. SPHAEROSTACHYA Mert. & Koch. See RHODORA xxiv. 403–204. 1922. Georgetown, Malden, Chelsea, Newton, Beaver Brook Reservation, Bridgewater.

P. LANCEOLATA L., var. SPHAEROSTACHYA Mert. & Koch, forma ERIOPHORA (Hoffmansegg & Link) Beck von Mann. See RHODORA xxiv. 203–204, 1922. Weed in sunny lawns, Wellesley (*Margaret B. Simmons*, May 15, —); Blue Hill Reservation (*W. H. Manning*, Sept. 3, 1894); Medfield (*N. T. Kidder*, July 20, 1884).

P. major L. Dooryards and moist places, very common throughout.

P. MEDIA L. Lawns and new grassfields, rare; Framingham, Wellesley, W. Roxbury, Milton, Stoughton.

P. Rugelii Dcne. Dooryards and moist places, common throughout.

C. H. KNOWLTON } *Committee on*
WALTER DEANE } *Local Flora.*

Selaginella apoda in Maine.—In 1861 George Lincoln Goodale collected in Wells, York Co., the plant which was described in Gray's Manual as *Selaginella apus* (L.) Spring, but which Professor Fernald has shown should be called *S. apoda* (L.) Fernald.[1] In the great Portland fire Dr. Goodale's specimens were lost, and the plant has been unknown in Maine from that time to July 4, 1922. On the latter date I revisited one of my old hunting-grounds at North Berwick, and, in moist gravelly soil beside a spring-fed rill, only a few feet from the Negutaquet River, I noticed among the grass a close carpet of a small delicate plant, whose peculiar shade of green first caught my attention. On picking some of it and observing that it had three rows of leaves, two at right angles to the stalk and the other smaller and appressed, in my ignorance of the hepatics I concluded that it was one of that group. It was so attractive that I collected a number of plants and laid them in a book where they remained unmolested till the spring of 1923. I then undertook to study the hepatics and thought that I would look over my "No. 7197." As soon as I used the compound on it, I knew that I had no hepatic. Taking Gray's Manual, I easily traced it to *Selaginellaceae* but there I was stopped: my plant grew erect, not prostrate; the microsporangia were below the macrosporangia. As usual I appealed to Professor M. L. Fernald to cut the Gordian knot, and his identification replaces *Selaginella apoda* in the flora of Maine.—John C. Parlin, Freedom, Maine.

[1] Rhodora, xvii. 68 (1915).

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Farlow Bot Lab

Rhodora

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Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 25. November, 1923. No. 299.

VARIATIONS IN TRILLIUM CERNUUM.

A. J. Eames and K. M. Wiegand.

In the basin of Cayuga Lake in Central New York, there is but one known station for *Trillium cernuum*. In aspect the plants from this station seemed to differ considerably from the more familiar material of eastern Massachusetts, and therefore a thorough study of the species was undertaken at the Gray Herbarium. Two fairly well marked tendencies were found, one represented by eastern, the other by western plants, but not sufficiently distinct, however, to be regarded as specific. That these two forms seem to have been vaguely recognized by some other botanists in the past is apparent from the label of a specimen from Lake Superior collected by J. W. Robbins where the following quotation is found: "not rare but the only species seen by me at Lake Superior. Not *T. cernuum* of N. E. That has the peduncle of the flower curved but this is inclined below the leaves but straight."

As is well known[1] the identity of the *T. cernuum* of Linnaeus is in doubt. The description consists of three words only: "flore pedunculato cernuo," which is scarcely sufficient to define the name, as in several species the flowers are more or less nodding or declined. Two citations were given by Linnaeus, one to Colden and the other to Catesby. The habitat given by Linnaeus was "Carolina" referring probably to the Catesby citation. In the Linnaean Herbarium is a specimen collected by Kalm and named *T. cernuum*. Judging from the measurements given by Rendle this is probably the eastern form of *T. cernuum* mentioned above. The Catesby citation has been

[1] Rendle, Journal of Botany xxxix. 332 (1901).

shown by Rendle to apply to *T. Catesbaei* Ell. and judging from Rendle's notes on the Colden citation the latter applies very doubtfully to *T. cernuum*, and more likely to *T. erectum*, as Colden is said to have described the flower as "rubropurpureus." It does not seem possible to settle this uncertainty at present. Meanwhile the name may be employed with its conventional significance.

The western form stands between the *T. cernuum* of the east and *T. declinatum* (Gray) Gleason, but seems to be distinct from the latter species though intergrading more or less with the former. These three plants may be distinguished as follows:

a. Anthers 6–15 mm. long, twice as long as the filaments or more, yellowish white; petals 10–34 mm. broad, 20–50 mm. long; peduncles 3–12 cm. long, straight, horizontal or slightly reflexed; leaves usually not at all petiolate............*T. declinatum.*

a. Anthers 2.5–6.5 mm. long, one-third longer than the filaments or less, pinkish; petals 5–17 mm. broad, 15–26 mm. long; peduncles 0.5–4 cm. long, recurved or reflexed; leaves usually slightly constricted into an obscurely petiolate base.

b. Petals 5–9 mm. broad (averaging 7.6 mm.), oblong-lanceolate; mature anthers 2.5–4.5 mm. long (averaging 3.8 mm.); peduncles in flower 5–25 (–35) mm. long (averaging 15 mm.)....................................*T. cernuum.*

b. Petals 10–17 mm. broad (averaging 13 mm.), oblong-oval or obovate; mature anthers 4–6.5 mm. long (averaging 5.4 mm.); peduncle in flower 12–40 mm. long (averaging 26 mm.), somewhat stouter....................var. *macranthum.*

T. DECLINATUM (A. Gray) Gleason, Bull. Torr. Bot. Club xxxiii. 389 (1906). *T. erectum* var. *declinatum* A. Gray, Man. ed. 5, 523 (1878). *T. cernuum* var. *declinatum* Farwell, Rep. Mich. Acad. Sci. xxi. 363 (1920).—Alluvial bottomlands: central New York to southern Minnesota, Tennessee and Missouri. The eastern limit given by Gleason is Ohio, but the species is frequent near LeRoy, southwest of Rochester, N. Y. and there is a specimen in the Gray Herbarium from Newark, Wayne Co., N. Y., collected by E. L. Hankenson in 1879. As correctly noted by Gleason this plant is related to *T. cernuum* and not to *T. erectum*. Like *T. cernuum* it has a pleasing odor when in flower (Gleason), is an inhabitant of lowland situations, and in proportion of leaf-length to height of plant is like that species. *T. erectum* inhabits wooded slopes, and flowers on the average nearly two weeks earlier than either *T. cernuum* or *T. declinatum*, has a dark purple ovary and generally longer stamens in relation to the length of styles. So far as there is evidence at hand *T. cernuum* is an inhabitant of mucky soil and *T. declinatum* of alluvium. The petals of the three forms under discussion in this paper are usually pure white, but several specimens of *T. declinatum* in the Gray Herbarium are described on the labels as pink or dark red and Farwell notes specimens with deep purple (*T. cernuum* var. *declinatum*

f. *Walpolei* Farwell) or brown purple (f. *Billingtonii* Farwell[1]) petals, filaments, and stigmas at Ypsilanti, Michigan.

T. cernuum L. Sp. Pl. 339 (1753).—Low and mucky woodlands and copses chiefly in sandy noncalcareous regions along the coast: Newfoundland to eastern Pennsylvania and Delaware (West Virginia, Millspaugh; Georgia, Small, Britton). It extends inland to Coös County, New Hampshire, and Worcester County, Massachusetts, and is found locally on the sand plains about Albany, New York. A specimen collected by Macoun at Belleville, Ontario, is apparently the typical form though out of range.

Var. **macranthum** var. nov. Petalis ovato-oblongis ovalibus vel plerumque obovatis 10–17 mm. latis; antheris maturitate 4.5–6.5 mm. longis; pedunculis 12–40 mm. longis.—Flowers more showy than in the typical form with broader often obovate petals, larger anthers, longer peduncles and apparently somewhat larger fruit. The peduncles are generally straighter and more often deflexed than recurved, though this is not so marked toward the eastern portion of the range. At the local station the flowers as they grow older increase in size until the petals may reach a maximum width of 21 mm. and a length of 32 mm. The accrescence of the corolla is not so marked in the typical form. This variety inhabits alluvial or mucky soils chiefly in calcareous regions: Vermont, western Massachusetts and southeastern Pennsylvania to Minnesota, Saskatchewan and Mackenzie, chiefly in the vicinity of the Great Lakes. Specimens examined: Vermont: Rutland, 1896, *W. W. Eggleston;* Fair Haven, 1916, *C. H. Knowlton.* Massachusetts: Sandstone area, Southwick, Hampden County, 1913, *J. Murdock, Jr. & C. Schweinfurth* (apparently this var.); Amherst, 1869, *G. Mackie,* 1886, *D. W. Rogers.* Pennsylvania: Chester County, 1858–1864, *S. P. Sharples,* transitional. New York: Round Marshes, Dryden, 1914, *A. J. Eames & L. H. MacDaniels,* no. 2012 (type in Gray Herb.); Lisbon, 1914, *O. P. Phelps,* no. 308 (not typical). Michigan: vicinity of the Michigan Agricultural College, Lansing, 1895, *H. C. Skeels, C. F. Wheeler;* Keweenaw, 1863, *J. W. Robbins,* 1885, *O. A. Farwell,* no. 462. Ontario: Casselman, 1891, *Wm. Scott,* 1891, *J. M. Macoun,* no. 13,869, not typical. Illinois: Ringwood, *G. Vasey.* Wisconsin: Winnebago County, *W. A. Kellerman.* Minnesota: Spring Grove, 1902, *C. O. Rosendahl,* no. 269. Manitoba: 1857, *Bourgeau;* Winnipeg, 1896, *J. M. Macoun,* no. 13,871; Portage la Prairie, 1906, *W. Herriot,* no. 78,379. Saskatchewan: Carleton House, *Hooker dup.* Mackenzie: Mackenzie River, old specimen. Material seen from the calcareous region of Aroostook County, Maine, was all in fruit. and its exact status could not be determined.

Cornell University, Ithaca, New York.

[1] Rep. Mich. Acad. xxi. 363 (1920).

SECOND REVISED LIST OF NEW ENGLAND HEPATICAE.[1]

Alexander W. Evans.

In 1903 the writer[2] published a preliminary list of New England Hepaticae, in which 123 species were reported. Of these, 75 were accredited to Maine, 81 to New Hampshire, 67 to Vermont, 76 to Massachusetts, 65 to Rhode Island, 94 to Connecticut, and 31 to all six of the New England States. From 1902 to 1912 a number of noteworthy species were discussed in this journal in a series of Notes on New England Hepaticae, many of the species representing additions to the flora. This series comprised ten numbers, the first appearing in November, 1902, and the last in November, 1912. In 1913 the writer[3] published a Revised List of New England Hepaticae, in which much of the information found in these Notes was incorporated. In this list 177 species were reported, 123 being accredited to Maine, 130 to New Hampshire, 109 to Vermont, 97 to Massachusetts, 77 to Rhode Island, 134 to Connecticut, and 53 to all six states.

Since the appearance of the Revised List the series of Notes has been continued, seven additional numbers having been published, as follows: the eleventh in April, 1914 (**16**: 62–76); the twelfth in June, 1915 (**17**: 107–120); the thirteenth in April and May, 1916 (**18**: 74–85, 103–120. *pl. 120* + *f. 1–40*); the fourteenth in December, 1917 (**19**: 263–272); the fifteenth in September, 1919 (**21**: 149–169. *pl. 126* + *f. 1–14*); the sixteenth in December, 1921 (**23**: 281–284); and the seventeenth in May and June, 1923 (**25**: 74–83, 89–98). In these Notes considerable new information regarding the distribution of the New England species is given, and this is included in the Second Revised List found below. As in the preceding lists the sign + indicates that an herbarium specimen has been seen, the sign — that a printed record has been found. In accordance with the prevailing views on the classification of the Hepaticae more families are recognized in the new list than in the earlier lists. Of these families the first four belong to the order Marchantiales, the next eleven to the Jungermanniales, and the last to the Anthocerotales.

[1] Contribution from the Osborn Botanical Laboratory.

[2] Preliminary Lists of New England Plants,—XI, Hepaticae. Rhodora **5**: 170–173. 1903.

[3] Rhodora **15**: 21–28. 1913. Full references to the first ten numbers of the Notes are given here.

Ricciaceae.	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Riccia arvensis Aust.	+	+	+	+	—	+
" Austini Steph.					—	+
" Beyrichiana Hampe				+		+
" crystallina L.			+	+		+
" dictyospora M. A. Howe						+
" fluitans L.	+	+	+	+	+	+
" Frostii Aust.			+			
" hirta Aust.						+
" membranacea Lindenb. & Gottsche						+
" sorocarpa Bisch.				+		+
" Sullivantii Aust.	+	+	+	+	+	+
Ricciocarpus natans (L.) Corda	+	+	+	+	+	+
Sauteriaceae.						
Clevea hyalina Lindb.			+			
Rebouliaceae.						
Asterella tenella (L.) Beauv.	+	+	+	+	+	+
Grimaldia fragrans (Balb.) Corda			+	+	+	+
" pilosa (Hornem.) Lindb.			+			
" rupestris Nees			+			
Reboulia hemisphaerica (L.) Raddi	+	+	+	+	+	+
Marchantiaceae.						
Conocephalum conicum (L.) Dumort.	+	+	+	+	+	+
Lunularia cruciata (L.) Dumort.	+		+	+	+	+
Marchantia polymorpha L.	+	+	+	+	+	+
Preissia quadrata (Scop.) Nees	+	+	+	+	+	+
Riccardiaceae.						
Metzgeria conjugata Lindb.	+	+	+	+	—	+
" crassipilis (Lindb.) Evans			+	+		+
" furcata (L.) Dumort.	+	+	+			+
" pubescens (Schrank) Raddi	+	+	+			
Pallavicinia Flotowiana (Nees) Lindb.	+	+	+	+		+
" Lyellii (Hook.) S. F. Gray	+	+	+	+	+	+
Riccardia latifrons Lindb.	+	+	+	+	+	+
" multifida (L.) S. F. Gray	+	+	+	+	+	+
" palmata (Hedw.) Carruth.	+	+	+	—	—	+
" pinguis (L.) S. F. Gray	+	+	+	+	+	+
" sinuata (Dicks.) Lindb.				+	+	+
Pelliaceae.						
Blasia pusilla L.	+	+	+	+	+	+
Fossombronia brasiliensis Steph.					—	+

Pelliaceae	Me.	N.H.	Vt.	Mass.	R. I.	Conn.
Fossombronia cristula Aust.				+		+
" foveolata Lindb.	+	+	+	+	+	+
" Wondraczekii (Corda) Dumort.		+	+	+		+
Pellia epiphylla (L.) Corda	+	+	+	+	+	+
" Fabroniana Raddi		+	+			+
" Neesiana (Gottsche) Limpr.	+	+	+	+		+
Calobryaceae.						
Scalia Hookeri (Lyell) S. F. Gray		+				
Lophoziaceae.						
Chiloscyphus fragilis (Roth) Schiffn.	+	+		+		+
" pallescens (Ehrh.) Dumort.	+	+	+	+	+	+
" polyanthos (L.) Corda	+	—	—	—	—	+
" rivularis (Schrad.) Loeske	+	+	+	+	+	+
Geocalyx graveolens (Schrad.) Nees	+	+	+	+	+	+
Gymnomitrium concinnatum (Lightf.) Corda	+	+				
" corallioides Nees	+	+				
Harpanthus Flotowianus Nees		+				
" scutatus (Web. & Mohr) Spruce	+	+	+	+	+	+
Jamesoniella autumnalis (DC.) Steph.	+	+	+	+	+	+
Jungermannia cordifolia Hook.	+	+	+			+
" lanceolata L.	+	+	+	+	—	+
" pumila With.	+	+	+	+	—	+
" sphaerocarpa Hook.	+	+				
Lophocolea alata Mitt.				+		+
" bidentata (L.) Dumort.	—		—	+	—	+
" heterophylla (Schrad.) Dumort.	+	+	+	+	+	+
" minor Nees	+	+	+	+	+	+
Lophozia alpestris (Schleich.) Evans	+	+	+	+		+
" attenuata (Mart.) Dumort.	+	+	+	+		+
" badensis (Gottsche) Schiffn.		+	+			+
" barbata (Schmid.) Dumort.	+	+	+	+		+
" bicrenata (Schmid.) Dumort.	+	+	+	+	+	+
" confertifolia Schiffn.	+	+	+			
" excisa (Dicks.) Dumort.	+	+			+	+
" Floerkii (Web. & Mohr) Schiffn.		+	+			
" grandiretis (Lindb.) Schiffn.			+			
" Hatcheri (Evans) Steph.	+	+				
" heterocolpa (Thed.) M. A. Howe	+	+	+			
" incisa (Schrad.) Dumort.	+	+	+	+	—	+
" inflata (Huds.) M. A. Howe	+	+	+	+		+
" Kaurini (Limpr.) Steph.	+	+	+			
" Kunzeana (Hüben.) Evans	+	+				

Lophoziaceae.	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Lophozia longidens (Lindb.) Macoun	+	+	+			+
" longiflora (Nees) Schiffn.	+	+				
" lycopodioides (Wallr.) Cogn.	+	+				
" marchica (Nees) Steph.	+	+	+			+
" Mildeana (Gottsche) Schiffn.	+	+	+	+	+	+
" obtusa (Lindb.) Evans	+					
" porphyroleuca (Nees) Schiffn.	+	+	+	+		+
" quinquedentata (Huds.) Cogn.	+	+	+			+
" ventricosa (Dicks.) Dumort.	+	+	+	+	—	+
Marsupella aquatica (Lindenb.) Schiffn.	+	+				
" emarginata (Ehrh.) Dumort.	+	+	+	+		+
" sparsifolia (Lindb.) Dumort.		+				
" sphacelata (Gieseke) Dumort.		+	+			
" Sullivantii (DeNot.) Evans	+	+	+	+		+
" ustulata (Hüben.) Spruce	+	+				
Mylia anomala (Hook.) S. F. Gray	+	+	+	+	—	+
" Taylori (Hook.) S. F. Gray	+	+	+			
Nardia crenulata (Sm.) Lindb.	+	+	+	+	+	+
" crenuliformis (Aust.) Lindb.				+		+
" fossombronioides (Aust.) Lindb.						+
" geoscyphus (DeNot.) Lindb.	+	+		+		+
" hyalina (Lyell) Carringt.	+	+	+	+		+
" obovata (Nees) Lindb.	+	+	+			
" obscura Evans	+	+	+	+		+
" scalaris (Schrad.) S. F. Gray	+					
Pedinophyllum interruptum (Nees) Schiffn.						+
Plagiochila asplenioides (L.) Dumort.	+	+	+	+	+	+
" Austini Evans		+	+			+
Sphenolobus exsectaeformis (Breidl.) Steph.	+	+	+			+
" exsectus (Schmid.) Steph.	+	+	+	+		+
" Hellerianus (Nees) Steph.	+	+	+	+	—	+
" Michauxii (Web. f.) Steph.	+	+	+	+		+
" minutus (Crantz) Steph.	+	+	+	+		

Cephaloziellaceae.	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Cephaloziella bifida (Schreb.) Schiffn.	+		+	+		+
" byssacea (Roth) Warnst.	+	+	+	+		+
" elachista (Jack) Schiffn.	+	+	+	+	+	+
" Hampeana (Nees) Schiffn.	+	+	+	+	+	+
" myriantha (Lindb.) Schiffn.	+	+	+	+	+	+
" papillosa (Douin) Schiffn.				+		+
" spinicaulis Douin						+
" Sullivantii (Aust.) Evans	+	+		+		

Cephaloziaceae.	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Bazzania denudata (Torr.) Trevis.	+	+	+	+		+
“ tricrenata (Wahlenb.) Trevis.	+	+	+			
“ trilobata (L.) S. F. Gray	+	+	+	+	+	+
Calypogeia fissa (L.) Raddi	+	+		+		
“ Neesiana (Massal. & Carest.) K. Müll.	+	+	+	+		+
“ paludosa Warnst.	+	+	+	+	+	+
“ sphagnicola (Arn. & Perss.) Warnst. & Loeske	+	+	+			+
“ suecica (Arn. & Perss.) K. Müll.	+	+	+			+
“ Sullivantii Aust.	+	+		+	+	+
“ Trichomanis (L.) Corda	+	+	+	+	+	+
Cephalozia bicuspidata (L.) Dumort.	+	+	+	+		+
“ catenulata (Hüben.) Spruce	+	+	+	+	—	+
“ connivens (Dicks.) Lindb.	+	+	+	+	+	+
“ curvifolia (Dicks.) Dumort.	+	+	+	+	+	+
“ fluitans (Nees) Spruce	+	+	+	+	+	+
“ Francisci (Hook.) Dumort.	+	+		+		
“ Loitlesbergeri Schiffn.		+				+
“ Macounii Aust.	+	+				
“ macrostachya Kaal.	+	+	+	+	+	+
“ media Lindb.	+	+	+	+	+	+
“ pleniceps (Aust.) Lindb.	+	+	+			+
Lepidozia reptans (L.) Dumort.	+	+	+	+	+	+
“ setacea (Web.) Mitt.	+	+	+	+		+
“ sylvatica Evans	+	—		+	+	+
Odontoschisma denudatum (Mart.) Dumort.	+	+	+	+	—	+
“ elongatum (Lindb.) Evans	+	+				
“ prostratum (Sw.) Trevis.				+	+	+
Ptilidiaceae.						
Anthelia Juratzkana (Limpr.) Trevis.		+				
Blepharostoma trichophyllum (L.) Dumort.	+	+	+	+		+
Ptilidium ciliare (L.) Nees	+	+	+	+	—	+
“ pulcherrimum (Web.) Hampe	+	+	+	+	+	+
Temnoma setiforme (Ehrh.) M. A. Howe	+	+	+			
Trichocolea tomentella (Ehrh.) Dumort.	+	+	+	+	+	+
Scapaniaceae.						
Diplophyllum albicans (L.) Dumort.	+					
“ apiculatum (Evans) Steph.	+		+	+	+	+
“ gymnostomophilum Kaal.	+		+			
“ taxifolium (Wahlenb.) Dumort.	+	+	+	+		+
Scapania apiculata Spruce	+	+				
“ convexula K. Müll.	+					
“ curta (Mart.) Dumort.	+	+	+	+		+

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
SCAPANIACEAE.						
Scapania dentata Dumort.	+	+	+	+		+
“ glaucocephala (Tayl.) Aust.		+	+			
“ hyperborea Jörgensen	+	+				
“ irrigua (Nees) Dumort.	+	+	+			+
“ nemorosa (L.) Dumort.	+	+	+	+	+	+
“ Oakesii Aust.	+	+	+			
“ paludicola Loeske & K. Müll.	+	+	+			+
“ paludosa K. Müll.	+	+	+			+
“ subalpina (Nees) Dumort.	+	+				
“ umbrosa (Schrad.) Dumort.	+	+				
“ undulata (L.) Dumort.	+	+	+	+	+	+
RADULACEAE.						
Radula complanata (L.) Dumort.	+	+	+	+	+	+
“ obconica Sulliv.	+		+	+		+
“ tenax Lindb.	+	+	+	+	—	+
PORELLACEAE.						
Porella pinnata L.	+	+	+	+	+	+
“ platyphylla (L.) Lindb.	+	—	+	—	—	+
“ platyphylloidea (Schwein.) Lindb.	+	+	+	+	+	+
LEJEUNEACEAE.						
Cololejeunea Biddlecomiae (Aust.) Evans	+	+	+	+	—	+
Frullania Asagrayana Mont.	+	+	+	+	+	+
“ Brittoniae Evans	+	+	+	+	+	+
“ eboracensis Gottsche	+	+	+	+	+	+
“ inflata Gottsche						+
“ Oakesiana Aust.	+	+	+			
“ plana Sulliv.					—	+
“ riparia Hampe		+	+	—		+
“ saxicola Aust.						+
“ Selwyniana Pears.	+	+	+			
“ squarrosa (R. Bl. & N.) Dumort.					—	+
“ Tamarisci (L.) Dumort.	+			+		+
Jubula pennsylvanica (Steph.) Evans	+	+	+	+	—	+
Lejeunea cavifolia (Ehrh.) Lindb.	+	+	+	+	—	+
“ patens Lindb.	+					+
Leucolejeunea clypeata (Schwein.) Evans		+		+		+
“ unciloba (Lindenb.) Evans					+	
ANTHOCEROTACEAE.						
Anthoceros carolinianus Michx.						+
“ crispulus (Mont.) Douin		+	+	+		+
“ laevis L.	+	+	+	+	+	+
“ Macounii M. A. Howe	+	+				+
“ punctatus L.	+	—	—	+		+
Notothylas orbicularis (Schwein.) Sulliv.	+	+	+	+	—	+

Notes on the Preceding List.

It will be seen that this Second Revised List includes 196 species, a gain of 19, or nearly 11 per cent. over the first Revised List. From Maine 151 species are now reported, a gain of nearly 23 per cent.; from New Hampshire, 154 species, a gain of about 18 per cent.; from Vermont, 137 species, a gain of nearly 26 per cent.; from Massachusetts, 121 species, a gain of nearly 25 per cent.; from Rhode Island, 82 species, a gain of about 6 per cent.; from Connecticut, 147 species, a gain of nearly 10 per cent.; and from all six states, 67 species, a gain of about 28 per cent. The increases during the last ten years are naturally less striking than those between 1903 and 1913 (see Rhodora **15**: 26).

The list includes the following additions to local state floras, made during 1923: *Riccardia latifrons* for Rhode Island, the record being based on specimens collected by the writer at Westerly; *Pellia Neesiana* for Vermont, based on specimens collected by Miss Lorenz at Ripton; and *Lejeunea patens* for Connecticut, based on specimens collected by Miss Lorenz at Thomaston. The writer has likewise collected *Riccardia multifida, Chiloscyphus pallescens, Harpanthus scutatus* and *Cephalozia curvifolia* at Westerly, so that the Rhode Island records for these species are now given the + sign.

If the Second Revised List is compared with the first a number of differences become apparent. Some of these represent additions and others changes in names, the latter being largely due to modifications in the interpretation of genera and species. For the sake of convenience the differences between the lists are summarized below, with references to the Notes, the Roman numeral in each case indicating the number in the series and the Arabic numeral the page.

Additions: *Riccia Frostii* (XIV, 264); *Clevea hyalina* (XI, 62); *Grimaldia rupestris* (XI, 64, as *Neesiella rupestris*); *Fossombronia cristula* (XII, 107); *Scalia Hookeri* (XIV, 266); *Harpanthus Flotowianus* (XIV, 268); *Lophocolea alata* (XII, 111); *Lophozia grandiretis* (XI, 63); *Nardia fossombronioides* (XVI, 281); *N. obscura* (XV, 159); *Cephaloziella spinicaulis* (XII, 117); *Bazzania denudata* (XVII, 89); *Calypogeia fissa* (XIV, 271); *Cephalozia Loitlesbergeri* (XV, 168); *C. macrostachya* (XII, 114); *Diplophyllum gymnostomophilum* (XI, 71); *Scapania hyperborea* (XVI, 282); *S. Oakesii* (XIII, 75); *S. paludicola* (XIII, 77); *Porella platyphylloidea* (XIII, 109); *Lejeunea patens* (XVII, 97).

Changes of Names: *Ricciella crystallina, R. fluitans, R. membranacea* and *R. Sullivantii* (of the first Revised List) are replaced in the genus *Riccia* (XVII, 74); *Neesiella pilosa* and *N. rupestris* are included in the genus *Grimaldia* (XVII, 75); *Fossombronia salina* is superseded by *F. brasiliensis* (XVII, 75); *Plagiochila Sullivantii* (of list) is now *P. Austini* (XI, 68); *Calypogeia tenuis* is now *C. paludosa* (XII, 119); *Cephalozia serriflora* again becomes *C. catenulata* (XII, 112); *Diplophylleia albicans, D. apiculata* and *D. taxifolia* are placed in the genus *Diplophyllum* (XI, 74); *Scapania gracilis* (of list) is included under *S. nemorosa* (XIII, 75); *Porella rivularis* (of list) is included under *P. platyphylla* (XII, 109).

Yale University.

NOTES ON TRIOSTEUM PERFOLIATUM AND RELATED SPECIES.

K. M. Wiegand.

For many years the Triosteums of Central New York have given trouble to botanists. In 1918 the writer described a variety from this region (var. *glaucescens*, Rhodora xx. 116) but this did not entirely solve the difficulty. Two large and thrifty patches of the smooth-leaved type were found nearly 25 miles apart in which some individuals had broadly perfoliate leaves while the leaves of others in the same patch were entirely separate at the base. A careful comparison of various features of the leaves, flowers, and fruits, character by character, showed absolutely no other difference. These perfoliate-leaved plants could scarcely be interpreted as hybrids of *T. perfoliatum* and *T. aurantiacum* as only one other collection of plants with perfoliate leaves has been made in the entire basin of Cayuga Lake. This perplexing situation has led to a study of the whole group at the Gray Herbarium and through several seasons at Ithaca.

In his original paper on *T. aurantiacum* Bicknell[1] gave twenty-five differences between *T. perfoliatum* and *T. aurantiacum*. In this paper *T. perfoliatum* was said to differ from the latter species as follows: (1) the principal leaves strongly perfoliate instead of separate;

[1] Torreya i. 25 (1901).

(2) upper leaves sometimes separate instead of sometimes perfoliate; (3) internodes shorter; (4) plant stouter; (5) plant more leafy; (6) leaves more rugose, (7) thicker, (8) paler beneath, (9) more densely soft-pubescent; (10) calyx-segments much shorter, (11) less foliaceous, (12) narrower, (13) more acute; (14) corolla often duller and greenish on lower half instead of dull purplish red, firmer; (15) the tube scarcely dilated or two-lipped instead of decidedly two-lipped and upwardly dilated; (16) the lobes shorter and more erect, (17) and scarcely surpassing the anthers; (18) style more exserted; (19) fruits more numerous (6–8 instead of 2–6) and more crowded, (20) more globose, (21) smaller, (22) dull greenish-orange instead of orange or bright orange-red; (23) an inhabitant of more sandy soil, (24) and of lower more level woods and thickets; (25) flowering about two weeks earlier. To these differences the writer may add as no. (26) a more densely crisp-pubescent stem in *T. perfoliatum*. A comparative study of about 175 herbarium specimens in addition to many in the field has failed to show that these differences are all valid. With the character of perfoliate leaves only nos. 9, 12, 13, 14, 15, 16, 18, 23, and 26 could be even generally correlated. Under most of the other numbers no differences could be found while some numbers were indiscriminately variable. Where the above differences seemed to correlate, the correlation was, however, chiefly in averages and the extremes overlapped very badly, showing tendencies rather than distinct groups. To a certain extent it was found that the same characters were not always combined, thus forming various combinations of characters. Sortings on different characters showed no possibility of making distinct groups, the only groups approaching distinctness being those given in the key below. Perfoliate leaves were found occasionally in the non-perfoliate group; dense crisp pubescence frequently in the group with normally loose villous pubescence; narrow acute sepals where these should be broad and blunt; non-flaring corolla where this should be flaring. A constant difference in length of stamens could not be made out. In the var. *glaucescens* the sepals were narrow or broad. Though originally not doubting that *T. perfoliatum* and *T. aurantiacum* were distinct species, the writer has now come to the belief that there is far too much intergrading to make possible the retention of both as species. It is therefore proposed to treat the North American Triosteums as in the following key. Because of the exceptions, the varieties under *T. perfoliatum* are best recognized

by the summation of the characters given and not by any one character. It has not been possible to interpret the numerous names proposed by Rafinesque.[1]

a. Sepals finely and for the most part evenly and densely pubescent; flowers 2–6 at each node; corolla pale- to deep-purple, 8–15 (–17) mm. long, densely and often crisply puberulent, more or less glandular; pubescence of the stem various; leaves narrowly to broadly ovate-oblong, finely strigose or subglabrate above with hairs which when present are 1 mm. long or usually less.

b. Leaves velvety beneath.

c. Cauline hairs 1.5 mm. long or less, the majority very short and glandular.

d. Middle leaves usually perfoliate, densely velvety beneath; stem usually crisp-pubescent, often densely so; calyx-segments usually narrow (in flower 0.9–2.0 mm. wide, averaging 1.4 mm.), very acute; corolla pale, firm, the mouth 5–6 (–7) mm. in diam., usually not flaring; style usually exserted as much as 1.5–3.0 mm. . . . . *T. perfoliatum.*

d. Middle and other leaves usually not perfoliate, generally less velvety; stem usually villous; calyx-segments generally broader (in flower 1.5–2.8 mm. wide, averaging 2.0 mm.), obtuse or acute, generally more purple; corolla generally brighter and more purple, often thinner, the mouth 7–9 mm. in diam., usually more flaring; style rarely exserted. . . . . var. *aurantiacum.*

c. Cauline hairs 1.5–2.5 mm. long, nearly all of the long type; sepals with some marginal bristles; setae on upper surface of leaves up to 1 mm. long; approaching *T. angustifolium* . . . . var. *illinoense.*

b. Leaves glabrous or nearly so beneath, not perfoliate; pubescence of calyx and corolla generally as in var. *aurantiacum;* sepals usually acute. . . . . var. *glaucescens.*

a. Sepals hispid-ciliate, otherwise sparingly short-hispid or glabrous; flowers usually 2 at each node; corolla pale, 14–18 mm. long, loosely villous, slightly glandular, the lobes large and broad; stem setose-hispid, the hairs nearly all long (longest hairs 1.5–2.8 mm. long); leaves lanceolate to oblanceolate, distinctly hispid-strigose above with hairs 0.8–1.8 mm. long, not perfoliate.

b. Leaves glabrous beneath or strigose on the nerves; lobes of the corolla broad. . . . . *T. angustifolium.*

b. Leaves velvety beneath; the blade slightly broader and less acuminate; lobes of the corolla oblong; sepals more generally obtuse. . . . . var. *Eamesii.*

1. T. PERFOLIATUM L. Sp. Pl. 176 (1753). *T. majus* Michx. Fl. Bor.-Am. i. 107 (1803). Rocky woodland and open scrubby places in light soil: Massachusetts to the District of Columbia, in the mountains to North Carolina, and westward from Indiana and Tennessee to Wisconsin, Missouri, Kansas, and Nebraska. This is apparently a plant of the less rich and lighter, scarcely calcareous soils of the eastern slope of the Alleghany Mountains and of the

[1] New Flora of North America ii. 35–37 (1836).

upper Mississippi valley, extending on to Cape Cod in Massachusetts. It is structurally more constant than var. *aurantiacum*, the characters showing far fewer exceptions.

Var. **aurantiacum** (Bicknell) n. comb. *T. aurantiacum* Bicknell, Torreya i. 26 (1901). In somewhat richer and heavier soil than the last: Quebec, New Brunswick, southern Maine, eastern Massachusetts, Connecticut, and New York to the mountains of Virginia, and from Ontario to Illinois and Wisconsin. This variety is variable as to the characters usually used in separating it from the typical form. Occasional specimens have perfoliate leaves, but all other characters normal. It is not unusual to find the type of pubescence characteristic of the variety combined with acute and often narrow sepals as in the typical form of the species, and the reverse combination is almost equally common.

Var. **illinoense** n. var. A var. *aurantiaco* recedit caulibus et calycis segmentis et foliorum pagina superiori longius setosis. Differing from var. *aurantiacum* in the longer hairs on the stem, sepals and upper leaf surface. Ohio and Illinois. OHIO: Columbus, 1837, *Sullivant.* ILLINOIS: Joliet, *H. C. Skeels*, no. 615; Oquawka, *Harry N. Patterson* (TYPE in Gray Herb.); Galva, 1878, *C. H. Ford;* Stevens Creek, *A. Gleason;* Mahomet, *U. E. Davis.* Plants of this variety appear related to *T. angustifolium* in length of hair on the stems, on the upper leaf-surfaces and on the margins of the sepals; but though *T. angustifolium* has been reported from Illinois there is no evidence that this variety is a hybrid of it with *T. perfoliatum* var. *aurantiacum.*

Var. **glaucescens** n. comb. *T. aurantiacum* var. *glaucescens* Wiegand, RHODORA xx. 116 (1918). Valley of Cayuga Lake in Central New York where it is as common as var. *aurantiacum.* The writer has seen only one other specimen, and this from Allegheny County, Pennsylvania (*J. A. Shafer*, no. 72). The specimen from Lebanon County, Pa., cited with the original publication of this variety, appears on further study to differ from the Ithaca material. It may be a hybrid of *T. perfoliatum* var. *aurantiacum* and *T. angustifolium*, as the long setae on the sepals and upper leaf-surface would suggest.

T. ANGUSTIFOLIUM L. Sp. Pl. 176 (1753). *T. minus* Michx. Fl. Bor.-Am. i. 107 (1803). Connecticut to Maryland and in the uplands to Alabama and Tennessee; also in Missouri and Illinois. Several perplexing collections have every appearance of being hybrids between this species and *T. perfoliatum* var. *aurantiacum* both structurally and in the local occurrence.

Var. **Eamesii** n. var. Foliis subtus velutinis; corollae laciniis oblongis; sepalis saepius obtusis.—Leaves velvety beneath, slightly broader and less acuminate than in the typical form of the species; lobes of the corolla oblong; sepals more generally obtuse. Stratford (and Milford), Connecticut, 1897, *E. H. Eames;* 1902, *Eames* (TYPE in Gray Herb.); also 1899, *J. R. Churchill*, and 1905, *H. S. Clark.* This has almost the appearance of a distinct species. Dr. Eames says

on his label: "Several colonies of large and small size in rocky copses near coast. The only known N. E. stations [of *T. angustifolium*?] are Milford and Stratford, Connecticut, where I have traced it for several miles in detached colonies." Except for the oblong lobes of the corolla these plants have every appearance of being hybrids of *T. perfoliatum* var. *aurantiacum* and *T. angustifolium*, but true *T. angustifolium* has been reported from Connecticut only from the Windsor region many miles away. A specimen collected by R. C. Bean and M. L. Fernald in Sheffield, Berkshire Co., Massachusetts, resembles the Eames specimens except in the corolla, which, though young, is more like that of *T. perfoliatum* and its varieties.

Cornell University, Ithaca, New York.

CERCIS CANADENSIS IN CONNECTICUT.[1]

G. E. Nichols.

About fifteen years ago one of my students brought into the laboratory a twig of redbud, *Cercis canadensis*, which he had collected "somewhere on West Rock." West Rock is a trap ridge about 400 feet in height, situated on the outskirts of New Haven and site of the famous Judges' Cave. It is included in the New Haven city park system, but for the most part is in a natural condition, being very largely covered with second growth woodland. Since the redbud had not been recorded as a native plant northeast of New Jersey, it was assumed at the time that the specimen in question must have come from a planted tree; but subsequent inquiries from the superintendent of city parks elicited the information that no redbuds had ever been planted in the park, which covers an area of about 200 acres, and until recently the source of the specimen remained a mystery.

One day last May, however, as I was driving along the crest of the Rock, through woods that gleamed white with masses of blossoming dog-wood, my eye was caught by a mass of an entirely different color—the rose-pink of the redbud. The mystery was solved.

There they were, a clump of half a dozen good-sized individuals, ranging from half an inch to nearly two inches in diameter and up to about a dozen feet in height, together with two or three smaller plants.

[1]Contribution from the Osborn Botanical Laboratory

The entire group occupies a piece of ground less than three feet in diameter, and very likely has originated through root suckering from a single plant. How the original plant got there is another question; but from the location of the station—near the summit of a rocky ridge which has never been inhabited, and fifty feet from the nearest road, from which it is separated by a tangle of wood and thicket—it seems certain that the plant was not introduced by human agencies. Moreover, the redbud here occupies essentially the same sort of habitat which it favors on trap ridges in eastern Pennsylvania: a moist, rocky depression in oak-hickory woods, where it grows associated with such other woody plants as basswood and butternut, silky cornel and high bush blueberry, bittersweet and grape. In short, I have no hesitation in accepting this Connecticut station for the redbud as representing a northeastward extension in the known natural range of the species, notwithstanding the fact that it apparently fails to propagate itself further by seed.

YALE UNIVERSITY.

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NOTES ON SOME PLANTS OF THE ONTARIO AND ST. LAWRENCE BASINS, NEW YORK.

M. L. FERNALD AND K. M. WIEGAND.

DURING the latter part of August, 1923, the writers, accompanied by Professor A. J. Eames, made a botanizing trip by automobile through the eastern half of the Ontario basin of New York and along the St. Lawrence River as far as Ogdensburg. This region is classic ground in American botany and it was our hope to see growing some of the special plants which have long been known from stations in Oswego, Jefferson and St. Lawrence Counties. In this we were highly gratified, although the limited time at our disposal forced us to restrict the close botanizing to a few localities: Mud Pond, southwest of Oswego; the mouth of Salmon River, Oswego County; the sand dunes at Selkirk and near North Pond in Sandy Creek Township, Oswego County; the vicinity of Watertown, Jefferson County; the eastern shore of Chaumont Bay, Jefferson County; the mouth of French Creek, Clayton, Jefferson County; the vicinity of Morristown, St. Lawrence County; and Narrows Island in Black Lake, St. Lawrence County.

Among the plants collected were several which are interesting as indicating range-extensions or new stations for local species. In so far as these seem of sufficient importance for special record they are enumerated in the following notes.

PICEA CANADENSIS (Mill.) BSP. Limestone barrens along Chaumont River, near Depauville, Jefferson County.

Reported by Peck at various times from Essex County, with an outlying station in Washington County.

Typha angustifolia L., var. longispicata Peck, N. Y. State Mus. Rep. xlvii. 162 (reprint 36) (1894). Var. *virginica* Tidestrom, Rhodora, xiii. 242 (1911). Characteristic of lake- and stream-margins wherever we went in the Ontario basin, from Cayuga Lake northward and eastward to northeastern Jefferson County.

Potamogeton crispus L. Marly bottom overlying Silurian limestone, cove of Lake Ontario, southwest of Chaumont, Jefferson County.

P. strictifolius Bennett. Marly bottoms of creeks entering the St. Lawrence in Jefferson and St. Lawrence Counties. Plants excessively brittle, forming dense mats in deep water, mostly sterile and heavily loaded with winter buds; occasionally fruiting when reaching the surface.

P. Vaseyi Robbins. Deadwater at mouth of Salmon River, flowing over Silurian shales and schists, Selkirk, Oswego County; muddy pool overlying Silurian rock near Ossawegatchee River, Ossawegatchee, St. Lawrence County, heavily fruiting.

Potamogeton Friesii Rupr. Marly bottom overlying Silurian limestone, cove of Lake Ontario, southwest of Chaumont, Jefferson County.

Najas guadalupensis (Spreng.) Morong. Marly bottom overlying Silurian limestone, cove of Lake Ontario, southwest of Chaumont, Jefferson County.

Strikingly different from the common *N. flexilis* in its wiry and stiffly branching stems and rufescent coloring as well as in fruit. For discussion see Fernald, Rhodora, xxv. 108 (1923). *N. guadalupensis* was collected in 1920 by Dr. Harold St. John in Great Pond, Riverhead, town of Southampton, Suffolk County (no. 2541, distributed as *N. flexilis*, var. *robusta* Morong.).

Alisma Geyeri Torr. Marly bottom overlying Silurian limestone, cove of Lake Ontario, southwest of Chaumont, Jefferson County.

A characteristic species of western America, from Washington to North Dakota and Saskatchewan. Collected many years ago by Asa Gray at Ogdensburg, St. Lawrence County; and in 1918 by Brother Marie-Victorin in the St. Lawrence near Longueuil and Montreal, Quebec.

Panicum Gattingeri Nash. Dry sterile soil overlying Silurian limestone by Lake Ontario, southwest of Chaumont, Jefferson County; dry sterile soil overlying Cambrian rock, near Crystal Lake, south of Redwood, Jefferson County; dry sterile soil over Silurian ledges, Morristown, St. Lawrence County.

P. Tuckermani Fernald, Rhodora, xxi. 112 (1919). Damp ledges of Trenton limestone, bank of Black River, Dexter, Jefferson County; alluvial thickets and damp shores, Narrows Island, Black Lake, St. Lawrence County.

Presumably of general distribution on alluvial soils in northern and central New York.

P. flexile (Gattinger) Scribner. Dry sterile soil overlying Silurian limestone by Lake Ontario, southwest of Chaumont, Jefferson County; dry sterile soil over Silurian ledges, Morristown, St. Lawrence County.

P. virgatum L. Sand dunes overlying Silurian shales and schists by Lake Ontario, Selkirk, Oswego County, where occur many variations from the typical loosely stoloniferous plant to the densely cespitose var. spissum Linder, Rhodora, xxiv. 15 (1922).

House records,[1] as the northernmost station known to him in New York, Rensselaer in Rensselaer County.

P. agrostoides Spreng. Alluvial thickets and damp shores, Narrows Island, Black Lake, St. Lawrence County.

An unusually northern station, though not quite so far north as the northeastern limit, in Penobscot County, Maine.

Echinochloa muricata (Michx.) Fernald, Rhodora, xvii. 106 (1915). Common in swales and low grounds throughout the Ontario basin and northeastward at least to St. Lawrence County.

E. muricata, var. microstachya Wiegand, ibid., xxiii. 58 (1921). Common eastward at least to Jefferson County; forming large colonies quickly distinguished in the field as different from the typical form of the species.

Eragrostis peregrina Wiegand, Rhodora, xix. 95 (1917). As was to be expected this ruderal species was found in the railroad yard at Watertown, Jefferson County, a slight extension northward from previously known limits.

[1] House, N. Y. State Mus. Bull. no. 197: 52 (1918).

Puccinellia distans (L.) Parl., var. tenuis (Uechtr.) Fernald & Weatherby, Rhodora, xviii. 12 (1916). Saline clay about the salt sheds, south of Liverpool, Syracuse, Onondaga County.

An addition to the list of semi-halophytic plants of the Onondaga region. The coarser typical form of *P. distans* has already been recorded from there (Fernald & Weatherby, l. c.).

Elymus robustus Scrib. & Sm., var. vestitus Wiegand, Rhodora, xx. 90 (1918). Sand dunes overlying Silurian shales and schists by Lake Ontario, Selkirk, Oswego County; damp ledges of Trenton limestone, bank of Black River, Dexter, Jefferson County.

Eleocharis olivacea Torr. Quaking peaty margin of Mud Pond, Oswego, Oswego County.

Scirpus subterminalis Torr. Quaking peaty margin of Mud Pond, Oswego, Oswego County.

S. heterochaetus Chase. Deadwater at mouth of Salmon River, flowing over Silurian shales and schists, Selkirk, Oswego County.

Beautifully distinct and forming extensive colonies at the margin of the deadwater, where it is associated with *S. fluviatilis* (Torr.) Gray and *Typha angustifolia*, var. *longispicata* Peck.

Carex trisperma Dew., var. Billingsii Knight. Knolls in peat bog by Mud Pond, Oswego, Oswego County.

C. longirostris Torr. Rich woods on Silurian limestone near Natural Bridge, Limerick, Jefferson County.

Juncus balticus Willd., var. littoralis Engelm., forma **dissitiflorus** Engelm. in herb., caulibus 0.4–1.1 m. altis; inflorescentiis dissitifloris diffusis 0.4–1.5 dm. longis.

Culms 0.4–1.1 m. high: inflorescences remotely flowered, diffuse, 0.4–1.5 dm. long.

A very characteristic form of the American var. *littoralis* designated by Engelmann in the Gray Herbarium but apparently not published by him. The form in its most extreme development is very typical of the sands of the Great Lakes, but perfectly characteristic var. *littoralis*, with less diffuse inflorescences and somewhat approximate flowers, also occurs there; conversely, although the common plant of the Atlantic coast is typical var. *littoralis*, the forma *dissitiflorus* is occasionally collected near the sea. The following are representative of forma *dissitiflorus*.

MAGDALEN ISLANDS: swale, Brion Island, August 10, 1914, *St. John*, no. 1820. NOVA SCOTIA: sphagnous hillside, Truro, July 18, 1920, *Bissell & Linder*, no. 20,648. ONTARIO: Wellington, September 4, 1902, *Fowler*. NEW YORK: shore of L. Ontario, Sackett's Harbor, *A. Gray* (TYPE in Gray Herb.); sand dunes north of Selkirk, August 31, 1906, *Rowlee*, August 23, 1922, *Fernald, Wiegand & Eames*, no, 14,209; Long Pond on shore of L. Ontario, Monroe Co., July 3, 1917. *House*, no. 13. PENNSYLVANIA: dunes and marshes, Waldameer, Erie, June 17, 1910, *Pease*, no. 12,979. MICHIGAN: low damp ground, Benton Harbor, September 18, 1910, July 4, 1911, *Lansing*, nos. 2868, 3244; shore of Crystal L., near Frankfort, June 22, 1888, *Wheeler;* swamp, Fayette, August 20, 1901, *Barber;* wet sandy shore of Burt L., Cheboygan Co., July 11, 1917, *Ehlers*, no. 462. INDIANA: slough-borders, Millers, June 24, 1898, *Umbach;* boggy ground, Pine, June 17, 1908, *Lansing*, no. 2723, August 20, 1920, *Peattie*. WISCONSIN: sandy beach of L. Michigan, near Milwaukee, August, 1866, *Lapham* in Engelm. Herb. Junc. Bor.-Am. Norm. no. 2. ILLINOIS: wet sand beaches of L. Michigan, Waukegan, August 16, 1906, *Gleason & Shobe*, no. 315; Lake Shore, Chicago, *Vasey et al.*

JUNCUS PELOCARPUS Meyer. Quaking peaty margin of Mud Pond, Oswego, Oswego County.

MAIANTHEMUM CANADENSE Desv., var. INTERIUS Fernald, RHODORA, xvi. 211 (1914). Dry wooded sand dunes overlying Silurian rock by Lake Ontario, northwest corner of Sandy Creek Township, Oswego County.

The western extreme of the species, not previously known to occur east of Illinois, Wisconsin and Lake Nipigon, Ontario.

SALIX AMYGDALOIDES Anderss. General along water courses northeastward into St. Lawrence County.

Peck has recorded[1] "a single tree" at Lake Bonaparte in Lewis County as at the northern limit in the state, but the species is common on Black Lake in St. Lawrence County.

SALIX SYRTICOLA Fernald. *S. adenophylla* Schneider, Jour. Arn. Arb. i. 158 (1920) in part, perhaps Hook. Dry sand dunes overlying Silurian limestone by Lake Ontario, northwest corner of Sandy Creek Township, and sand dunes at Selkirk, Oswego County.

The typical shrub of the Great Lakes, apparently not heretofore recorded from Lake Ontario.

BETULA PAPYRIFERA Marsh., forma **coriacea**, n. f., foliis valde coriaceis lucidis.

[1] Peck, N. Y. State Mus. Bull. no. 94: 42 (1905).

Leaves strongly leathery, lustrous.—NEW YORK: sand dunes overlying Silurian shales and schists by Lake Ontario, Selkirk, August 23, 1922, *Fernald, Wiegand & Eames*, no. 14,244 (TYPE in Gray Herb.).

Very characteristic in its heavy and thick foliage, but in leaf-outline, pubescence and fruiting aments clearly belonging with *B. papyrifera*.

POLYGONUM RAMOSISSIMUM Michx. Wet Silurian limestone ledges by cove of Lake Ontario, southwest of Chaumont, Jefferson County. The typical western plant with yellowish calyx-lobes.

P. DOUGLASII Greene. On dry sandstone or gneiss ledges, Narrows Island, Black Lake, St. Lawrence County.

P. ROBUSTIUS (Small) Fernald, RHODORA, xxiii. 147 (1921). Peaty margin of Black Creek, Alexandria, Jefferson County; filling a small brook in a wet swale near the southern end of Black Lake, St. Lawrence County.

P. SETACEUM Baldwin. Along brooks in swampy woods and thickets overlying Silurian sandstone, Mud Pond, Oswego, Oswego County.

A species chiefly of the southern coastal plain, probably more general northward than has been supposed: discovered for the first time northeast of the Carolinas by Bicknell, on Nantucket, in 1907;[1] found by Dr. Witmer Stone[2] on Cape May, New Jersey, in 1909; by Fernald & Long on Cape Cod, Massachusetts, in 1918; and by St. John at Sweezy Pond, Southampton, Long Island, in 1920.

CAKILE EDENTULA (Bigel.) Hook., var. LACUSTRIS Fernald, RHODORA, xxiv. 23 (1922). Beach and frontal sand dunes by Lake Ontario, Selkirk, Oswego County.

SEDUM TELEPHIOIDES Michx. Dry ledges of Cambrian sandstone, Fisher's Landing, east of Clayton, Jefferson County.

GEUM CANADENSE Jacq., var. CAMPORUM (Rydb.) Fernald & Weatherby, RHODORA, xxiv. 49 (1922). Dry sand dunes overlying Silurian limestone by Lake Ontario, northwest corner of Sandy Creek Township, Oswego County.

RUBUS GLANDICAULIS Blanchard. Abundant in damp thicket back of sand dunes overlying Silurian limestone by Lake Ontario, northwest corner of Sandy Creek Township, Oswego County.

[1] Bicknell, Bull. Torr. Bot. Cl. xxxvi. 454 (1909).
[2] Stone, Pl. So. N. J. 424 (1912).

R. FRONDOSUS Bigel. Back of sand dunes overlying Silurian shales and schists by Lake Ontario, Selkirk, Oswego County.

R. PERGRATUS Blanchard. Low sandy pasture overlying Silurian limestone, northeast corner of Sandy Creek Township, Oswego County; thicket by Chaumont River, Depauville, Jefferson County.

R. RECURVANS Blanchard. Sandy thickets and dry open woods, Constantia and Phoenix, Oswego County.

R. ELEGANTULUS Blanchard. Border of open swale over Silurian sandstone, Morse, Hastings, Oswego County.

R. VERMONTANUS Blanchard. Dry sterile bank between Mud Lake and Crystal Lake, south of Redwood, Jefferson County.

R. JACENS Blanchard. Sandy thickets overlying Silurian sandstone, two miles west of Constantia, Oswego County.

R. HISPIDUS L., var. MAJOR Blanchard. Damp thickets in sand dunes overlying Silurian limestone by Lake Ontario, northwest corner of Sandy Creek Township, Oswego County.

PRUNUS PUMILA L. Shrubs 1–2 m. high, on sand dunes overlying Silurian shales and schists by Lake Ontario, Selkirk, Oswego County. For discussion see Fernald, RHODORA, xxv. 72 (1923). Recorded from the same area, "Pulaski, Oswego Co." in Report of the State Botanist for 1909 (p. 35).

BAPTISIA TINCTORIA (L.) R. Br. Dry thickets south of sand dunes overlying Silurian shales and schists by Lake Ontario, Selkirk, Oswego County.

POLYGALA SANGUINEA L. In 1893, Peck noted[1] the bright color of the flowers of plants of the interior (Albany County) as contrasted with the duller coloring of the Long Island plant. The same brilliant coloring was conspicuous in the two colonies seen by us in northern Oswego County.

CALLITRICHE HERMAPHRODITICA L. Cent. I. Pl. 31 (Feb., 1755). *C. autumnalis* L. Fl. Suec. ed. 2: 2 (Oct., 1755). For discussion of nomenclature see Schinz & Thellung, Vierteljahrs. Naturforsch. Gesell. Zurich, liii. 548 (1909). Shallow cove in Guffin Bay, near Point Salubrious, Jefferson County; marly bottom, overlying Silurian rock, mouth of Chippewa Creek, Morristown, St. Lawrence County; muddy pool in sandy swale overlying Silurian rock by the St. Lawrence River, Morristown.

[1] Peck in N. Y. State Mus. Report 46: 122—reprint 42 (1893).

Apparently frequent or common in calcareous waters of the St. Lawrence system in Jefferson and St. Lawrence Counties. Paine[1] cited it as collected by Clinton at Alexandria Bay, Jefferson County and it is in the Gray Herbarium, labeled by Gray as collected at Ogdensburg, St. Lawrence County, by Clinton. Mrs. O. P. Phelps found it in a small stream at Morristown; and it extends eastward to the Ottawa and Richelieu valleys in Quebec and Lake Champlain in Vermont. In New York it seems to be rare west of Jefferson County.

Acer saccharinum L. At the only two stations where specimens were collected (for locality), on Black Creek, Alexandria, Jefferson County and Black Lake, St. Lawrence County, the foliage is green beneath, almost or quite lacking the white bloom characteristic of the species.

Vitis vulpina L., var. **syrticola**, n. var., a forma typica recedit foliis maturis subtus valde pilosis, petiolis dense pilosis.

Differing from the typical form in having the mature leaves densely pilose beneath; the petioles densely pilose. New York: sand dunes overlying Silurian shales and schists by Lake Ontario, Selkirk, Oswego County, *Fernald, Wiegand & Eames*, no. 14,388 (type in Gray Herb.; duplicate in Herb. N. Y. College of Agric.). Michigan: top of low sand dunes, New Buffalo, Berrien County, July 20, 1911, *O. E. Lansing*, no. 3287. Indiana: dry woods on sand dunes, Miller's, September 4, 1911, *Sherff*.

Malva Alcea L. Roadside, Scriba, Oswego County.

Hypericum boreale (Britton) Bicknell. Quaking peaty margin of Mud Pond, Oswego, Oswego County.

Lechea intermedia Leggett. Sterile ledges, Narrows Island, Black Lake, St. Lawrence County.

Collected by Mrs. Orra Parker Phelps slightly to the northeast, at Norfolk.

Viola affinis LeConte. On rock-talus, Narrows Island, Black Lake, St. Lawrence County.

Lythrum alatum Pursh. With *Polygonum robustius* in a wet swale near the southern end of Black Lake, St. Lawrence County; appearing indigenous.

Cornus Baileyi Coult. & Evans. Sand dunes overlying Silurian shales and schists by Lake Ontario, Selkirk, Oswego County.

[1] Paine, Pl. Oneida County, 71 (1865).

Recorded by House[1] from the dunes of Jefferson County. Not very satisfactorily separable from *C. stolonifera* Michx., of which it may prove to be a variety.

Satureja vulgaris (L.) Fritsch, var. **diminuta** (Simon), n. comb. *Clinopodium vulgare*, var. *diminutum* Simon, Bull. Soc. Bot. Deux-Sevres (1903) 207. *S. Clinopodium*, γ *diminuta* (Simon) Rouy, Fl. de France, xi. 337 (1909).

We have been unable to see Simon's original description, but Rouy characterizes var. *diminuta* as follows: "Plante réduite dans toutes ses parties; verticilles pauciflores." Such a plant, with foliage-leaves at most 2.3 cm. long, with the bracteal leaves barely exceeding the verticels and with the calyx shorter than in the ordinary plant (mature verticels only 1–2 cm. in diameter), is a characteristic weed of roadside-fencerows and borders of limy pastures near Watertown, Jefferson County, New York (*Fernald, Wiegand & Eames*, no. 14,431).

Agalinis paupercula (Gray) Britton. Frequent in peaty, sandy or damp rocky ground from Oswego County to St. Lawrence County.

House records[2] the salt-marsh species, *A. maritima* Raf., as collected "at Mud Lake near Hannibal, Oswego County," a most singular habitat for a halophytic species for, as Rowlee clearly states in his account of the region, "Mud Lake is by no means a saline place."[3] It is bordered by a peaty quagmire full of *Lycopodium inundatum* L., *Woodwardia virginica* (L.) Sm., *Eleocharis olivacea* Torr., *Scirpus subterminalis* Torr., *Drosera longifolia* L., *Utricularia gibba* L., etc., back of which is an acid bog with the ordinary plants of acid bogs. Our plant from there is very characteristic *A. paupercula*.

Lonicera glaucescens Rydb. Dry wooded sand dunes overlying Silurian rock by Lake Ontario, northwest corner of Sandy Creek Township, Oswego County.

Near if not quite the eastern limit of the species.

Campanula uliginosa Rydb. Common in swales of Oswego County.

C. aparinoides Pursh seems to be rare in northern, central and western New York, its place being taken by *C. uliginosa*, which is distinguished not only by its stiffer habit, narrower and more elongate

[1] House, N. Y. State Mus. Bull. nos. 243–244: 32 (1923)..
[2] House, N. Y. State Mus. Bull. nos. 205–206: 30 (1919)
[3] Rowlee, Am. Nat. xxxi. 795 (1897)

leaves, strongly ascending mostly naked peduncles and somewhat larger and often bluish corollas; but especially by the calyx and capsule. Measurements of all the specimens in the Gray Herbarium and the herbarium of the New England Botanical Club give the following results.

C. aparinoides: naked portion of peduncle 0.3–3.5 cm. long; flowering calyx 1.3–3.8 mm. long, its lobes 0.7–2 mm. long; capsule 1.2–2 mm. long.

C. uliginosa: naked peduncle 1–6 cm. long; flowering calyx (3–)4–6.7 mm. long, its lobes 2–4 mm. long; capsule 3.2–5 mm. long.

Bidens discoidea (T. & G.) Britton. Characteristic of swales, inundated shores and alluvium from Oswego County to St. Lawrence County.

These stations apparently connect with those on Lake Champlain, Vermont[1] and in the Ottawa valley.[2]

FOMES ROSEUS (A. & S.) CKE. AND TRAMETES SUBROSEA NOM. NOVUM.

James R. Weir.

The conflicting statements in the literature concerning the identity of *Fomes roseus* and the fungus commonly called "*Trametes carnea* Nees" have led to confusion in the minds of students and investigators engaged in the practice of forestry and in the preservation of structural timbers. This confusion is apparently due to a limited experience of the authors in studying the species in the field and superficial examination of the structure and appearance of the organism. For example, the insistence that "*T. carnea*" is an annual plant (15), that *Fomes roseus* may be distinguished by its ungulate form and stratified tubes (14), that the context color is the same in both species (15), and that one is a form or variety of the other are some of the statements published over and over again, none of which can be substantiated in fact.

It is the purpose of this paper to point out some characters which definitely establish the entity of each of the species, to furnish a

[1] Blake, Rhodora xvi. 40 (1914).

[2] Rivière-aux-Moustiques, near Ottawa, Ontario, *Rolland*, no. 8197, distributed as *B. frondosa*.

means by which they may be readily recognized in the field, and to offer a logical change in the use of names to distinguish them.

History.

In order to show that the name *Polyporus carneus*, as originally applied, has nothing to do with the American species, the rather confused history of the misreference is necessary.

In 1826, Blume and Nees von Esenbeck published a new species from Java, as follows:

"*Polyporus* (*Apus*) *carneus*—P. suberosus, durus, pileis effusis imbricatis rugosis carneis, poris minutis concoloribus. (Locus in Systemate mycologico inter Polyporos Apodes perennes post *P. roseum* Alb. et Schw., nostro affinem speciem.)

Descriptio.

Pilei longitudinaliter effusi, imbricati, rarius solitarii, tres vel quatuor uncias longi, unciam et sesquiunciam lati, duas vel tres lineas crassi, tuberculato-rugosi et obsolete zonati, glabri, extus intusque carnei. Pori minuti, tamen nudo oculo conspiciendi, subrotundi marginibus subacutis, concolores. Color incarnatus siccitate expallescit, humiditate contra in rubedinem transit. Substantia suberosa, dura, sicca. Contextus floccosus. Asci tenues, irregulares, filiformes, pellucidi. Sporae desiderantur.

Patria: *Iava* insula, ad truncos (*Blume*)."

Fries (12) listed and described the species under this name in 1838, referred to the original place of publication and emphasized the characters "*glabro azono carneo.*" In 1874, Fries (13) confused the Javanese plant with the American species and again referred to the characters "*glabro azono carneo.*" The American species is not glabrous or azonate.

Berkeley (1) in 1847 described a new species from Ceylon, as follows:

"P. (Anodermei) *rubidus*, n. sp.; roseo-gilvus; pileo tenui coriceo subreniformi sulcato-zonato inequabili pulverulento sericeo; contextu concolori; poris minimis brevibus punctiformibus. Gardn. 96.

Point de Galle, Ceylon. On fallen trees in woods. Dec. 1844.

Pilei 2 inches or more broad, 1½ inch long, laterally confluent, subreniform or subflabelliform, thin, coriaceous of a delicate rosy grey, uneven, sulcate or zoned, clothed with delicate mealy pubescence.

Substance coloured like the pileus.

Pores rosy grey, very minute, but visible to the naked eye, punctiform.

A very elegant species, resembling in colour *P. Feei* and *P. carneus*, but without any distinct cuticle.

P. carneus, too, is described as glabrous, which is not the case with the present species, which I should otherwise have been inclined to think a well developed form of the Java fungus."

Although the original material of Blume and Nees has not been examined by any mycologist of the present generation, there is no

reason to believe that Berkeley's species from Ceylon is different from the Javanese plant. Material of *Polyporus rubidus* has been examined from Ceylon, Java, the Philippines, and Australia, and it agrees with the description of *P. carneus* and appearance and color of Nees' figure. The species is entirely distinct from the American plant, in color, being a pale rose or pink, becoming whitish with age. It also differs in the shape and size of the spores, in the character of the pileus, which may be either glabrous or pubescent, according to age and in the character of its decay. The species is not known to occur on coniferous wood. The plant falls in with the much named group represented by *P. confundens* Ces., *P. modestus* Kunz., *P. brachypus* Lev., and *P. atypus* Lev. Bresadola (6, 7) refers collections from Java and the Philippines to *Polyporus carneus* Bl. et Nees and states (8) that *P. carneus* of English and American authors is *Fomes Palliseri* Berk. from British North America. He is of the belief that *Polyporus rubidus* Berk. and *P. carneus* Bl. et Nees are identical.

Berkeley (2) in 1872 refers collections from the United States to "*Polyporus* (*Placodermei*) *carneus* Fr." These collections are Rav. Fung. Car. Fasc. 5, No. 14; No. 1160, Car. Inf. Curtis 3462; New York, Sartwell. All of these collections are typical of the common American plant and have nothing to do with the Javanese species.

There are two specimens in the Kew Herbarium, both examined by the writer, labeled as follows: "*P. Palliseri* Berk. Palliser's Brit. N. Am. (Saskatchewan) Expl. Expd. Col. E. Bourgeau 1857–8, and *T. arcticus* Carleton, Brit. Amer. 1858. Berkeley did not publish these names. The two specimens are identical and typical of the Carolina material which Berkeley later referred to *Polyporus carneus* Fr.

The name "*Polyporus Palliseri* Berk. in Herb. Berk." was published by Cooke (9) in 1881. The material on which this name is based is an entirely different species, the type locality being Victoria and Queensland (see Kew Herb. Sheet no. 5520). Cooke describes the context as *carne albo*. This species which had already been described by Berkeley (3) under the name *Trametes cingulata* and *T. picta* (4) is common through Oceanica and parts of Africa and is not known to occur on coniferous wood.

Cooke (10) in 1885 under the section *contextu rhabarbarino v. ferrugineo* lists *Polyporus Palliseri* Berk. in Herb. Berk. no. 2562 of

British North America under Fomes, but without description, giving as a synonym *Trametes arcticus* Berk. no. 3044. It is not unlikely that Berkeley also had unpublished material from Australia under the name of *Polyporus Palliseri* which Cooke used for his Australian species, consequently the above is the first time Berkeley's herbarium names, properly identified as to material, were published. No description accompanied the publication of the names and they may, therefore, be disregarded.

Cooke (11) apparently seeing his error in his first use of the name *P. Palliseri*, either being ignorant of or wilfully disregarding Berkeley's older name (*T. cingulata*), republished the Australian species in 1886 under the name "*Polyporus argentatus*" (= "*P. Palliseri* non Berk.") with exactly the same description as he had previously employed for *P. Palliseri*.

Saccardo, under *Fomes Palliseri* Berk., copied Cooke's original description, word for word, and uses exactly the same description for *Polyporus argentatus* Cke.

Bresadola (8) has adopted the name *Polyporus* (*Fomes*) *Palliseri* Berk. to represent the American and North European species referred by authors to "*P. carneus* Nees." This seems objectionable. The confusion over the name, although *P. Palliseri* of Cooke is a synonym of *T. cingulata* Berk., and the fact that it is desirable to refer both the Australian and American species to *Trametes*, makes it seem more desirable to disregard Berkeley's herbarium name.

Trametes arcticus Berk. in herb., though based on an authentic specimen and of the same species and possibly of the same collection, would be confused with *Polyporus arcticus* Fr. (Epicr. 479). Although the latter species is a *Polystictus*, as compiled by Saccardo, and may not be distinct from the darker-pored form of *Polystictus zonatus* Fr., there is still opportunity for confusion. Lloyd suggested (Letter 39, note 25) that the plant on which Berkeley based his name *Polyporus rubidus* (Ceylon) be accepted in the sense of *Polyporus carneus* Bl. et Nees of Java. He later proposes calling the American plant *Polyporus carneus* and the Javanese plant *Polyporus rubidus* as a way out of the difficulty. Such inconsistent juggling, however, gets nowhere, and nothing constructive is offered. The fact remains as Lloyd has pointed out that one of the most common polypores in America has not been regularly named and described. Therefore, the name **Trametes subrosea** nom. nov. is proposed.

Classification.

The history of *Fomes roseus* has not been so much in dispute. As far as the writer has been able to determine, the original collection does not exist. The location of the herbarium of Albertini and Schweinitz appears to be unknown. *Fomes roseus* occurs frequently in Europe and is typical in spore and other characters of the plant in America. *Trametes subrosea* is rare in Europe and on that account the question as to which species Albertini and Schweinitz originally had before them cannot logically be raised. Both may become thick, ungulate and stratified or they may be thin and applanate. The species are quite distinct, however. Ready means of distinction in the field are the darker-colored context, and the conspicuous narrow zonate and radiate fibrillose surface of the pileus of *Trametes subrosea*. The context may become reddish brown to brown in very old specimens. The context of the original American specimen in Berkeley's herbarium is almost brown, so that Cooke was practically correct in listing it under "rhabarbarino-ferrugineo." The zonate condition of the pileus is often obscured by a revival of growth during very wet weather so that it often appears soft and smooth. The pores have a tendency to become discolored with age especially when the substratum is about exhausted. Such specimens are often thin and applanate and may lead to the conception that the plant is annual. The pores may be conspicuously stratified in old specimens. Frequently the plant is ungulate. The rather narrow ellipsoid to cylindrical hyaline spore has a constant tendency to be allantoid and quite regularly so in occasional specimens. This condition very readily distinguishes the species from *Fomes roseus*, the spores of which never tend to become allantoid, average broader and are frequently acuminate at one end. In contrast to the normally fibrillose zonate pileus of *Trametes subrosea*, that of *Fomes roseus* is normally smooth without markings, frequently conspicuously sulcate, and may be rimose in very old specimens. The context is constantly of a lighter color in normally developed specimens. The older pores are usually filled with a whitish deposit and are more styptic. The pores may be stratified or not, depending upon the age of the specimen. In America, *Fomes roseus*, as far as known, is confined to coniferous wood. *Trametes subrosea* occurs on both hard woods and conifers and is more

destructive to the heart and sapwood of both living and dead trees than is the case with the less common *Fomes roseus*. The decay caused by both species usually occurs locally at first in large indistinct pockets which later unite with other pockets. The wood within the pockets breaks up into more or less distinct brown or dark brown rectangular blocks. The decay of *T. subrosea* is usually of a darker color and may become somewhat fibrous in some woods.

Trametes subrosea may be confused with *T. Feei* Fr. (*T. Sagreeana* (Mont.) Fr.), a common tropical plant originally described from Brazil. The latter has been found in southern Florida, where the former also occurs. The species are distinct on several counts, both as to pileus and spore characters and relation to substrata. There is also slight difference in the character of their decays.

The main distinguishing characters of the above three species may be summarized as follows:

Context shades of pink or rose color.
- *Context* Japan rose to cacao brown or brownish vinaceous (Ridgway).
  - *Pileus* usually thin but sometimes conspicuously stratified when old, normally zonate with radiating appressed fibrils when not obscured with new hyphal growth, brown, brownish pink, silvery gray or black with age; *pores* dark pink to dark rose, small, discolored with age; *spores* narrowly elongate, ellipsoid to cylindric or allantoid, hyaline, gutta not observed, average 6.3 × 2–3 μ; on wood of deciduous and coniferous trees in Europe and America........................ *Trametes subrosea.*
  - *Pileus* thin, smooth, even, velvety, pinkish-brown to black when old; *pores* pink rose, or brownish vinaceous, black with age, minute, smaller than above; *spores* ellipsoid, rarely short cylindric, frequently acuminate at one end, average 6.4 × 3.1 μ; on hard woods in the tropics, in the United States only in southern Florida.. *Trametes Feei.*
- *Context* pale vinaceous pink (Ridgway) constantly of a lighter color than above.
  - *Pileus* thick, distinctly stratified in split section when old, smooth, frequently conspicuously sulcate, pink, brownish-pink, brown to black with age, sometimes rimose or with a slight resinous crust when very old; *pores* light pink or light rose, somewhat brownish with age or when bruised; *spores* broadly elongate, ellipsoid to cylindric never allantoid, hyaline, guttulate, average 8–10 × 2.5–4 μ; found only on coniferous wood in Europe and America.................................... *Fomes roseus.*

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Office of Investigations in Forest Pathology,
Bureau of Plant Industry, Washington, D. C.

BUTOMUS UMBELLATUS ON THE ST. LAWRENCE RIVER.

Clarence H. Knowlton.

While collecting plants along the St. Lawrence River at Ste. Angèle de Laval, opposite Three Rivers, Quebec, the last day of July, Mr. Edward B. Chamberlain and I were much surprised to find in the swampy land near the shore a striking endogenous plant that neither of us had seen nor heard of before. Good specimens were a meter tall, with an umbel of large pink flowers, veined with darker red. At the base was a short horizontal rootstock with a large cluster of ensiform leaves.

We soon discovered that the plant did not fit the ordinary key to the endogens, for the flower had three colored sepals, three larger petals, *nine* stamens, and six *separate* carpels.

Later investigation at the Gray Herbarium showed us that this handsome plant was *Butomus umbellatus* L. of the small family

Butomaceae, closely related to the *Alismaceae,* but distinct because of its nine stamens, six separate carpels, and the lack of placentae, as the ovules are borne all over the interior walls of the carpels. It is a marsh plant widely distributed in Europe and western Asia, commonly known as the flowering rush.

This species was first found on the St. Lawrence by Brothers Marie-Victorin and Rolland-Germain in 1905, at Laprairie on the flats (battures) of the river. It was soon after discovered at Beauharnois, Chateaugay, Valois and Longueuil, and was first reported in Le Naturaliste Canadien of May, 1908, and The Ottawa Naturalist of July, 1908. An independent appearance of the plant along the canal at Ottawa as early as 1906 was reported by E. H. Blackader in The Ottawa Naturalist of December, 1908.

By 1918 the plant had spread so fast that Brother Marie-Victorin wrote as follows:[1] "One of the latest floral acquisitions—a desirable one—made on the shores of the St. Lawrence, is the flowering rush, the umbellate *Butomus,* a very pretty plant which covers broad flats at least from Chateaugay to Nicolet, and which is especially abundant about Montreal. This beautiful Alismaceous species spreads rapidly, as is shown by its conquest of this large domain in less than forty years. It has not been reported elsewhere in America."

In our own travels the past summer we found *Butomus* at Ste. Angèle de Laval, Pointe du Lac, Berthierville, St. Sulpice and St. Lambert. In the Gray Herbarium is a specimen from the wet stony beach at Lachine, collected in 1922 by Judge J. R. Churchill, and another from the "zone intercotidale de la grève de Beauport" (near Quebec) collected by Brother Rolland in 1922. The flowering rush is evidently spreading rapidly down river. As it has many seeds, it would seem quite possible for it to work gradually up the St. Lawrence and its tributaries, so that some day it may make its appearance by Lake Ontario or Lake Champlain, within the limits of the United States.

A good description of the genus and species can be found in the North American Flora, Vol. 17, pt. 1. 63, 1909.

HINGHAM, MASSACHUSETTS.

[1] Revue Trimestrielle Canadienne, 263, November, 1918.

Vol. 25, no. 299, including pages 189 to 204 was issued 4 December, 1923.

ERRATA

Page 12, line 12, *for* off *read* of.
" 13, " 7, *for* leads *read* lead.
" 18, " 16, for *Peteers* read *Peters.*
" 40, lines 5 & 7, *for* M. *read* N.
" 47, " 35 & 36, the foot notes following the figures should be transposed.
" 53, line 23, for *Baumia* read *Baumea.*
" 99, " 7, for VIRGIANUM read VIRGINIANUM.
" 107, " 12, *for* specia linterest *read* special interest.
" 113, " 33, *for* Vahl. *read* Willd.
" 113, " 33, for ARCTILOBA read ARCTOBIA.
" 168, " 31, *for* not *read* now.

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